BY APPOINTMENT TO
HER MAJESTY QUEEN ELIZABETH II
MANUFACTURERS OF DAIMLER AND JAGUAR CARS
JAGUAR CARS LIMITED COVENTRY ENGLAND

BY APPOINTMENT TO
HER MAJESTY QUEEN ELIZABETH
THE QUEEN MOTHER
MANUFACTURERS OF DAIMLER AND JAGUAR CARS
JAGUAR CARS LIMITED COVENTRY ENGLAND

BY APPOINTMENT TO
HIS ROYAL HIGHNESS THE PRINCE OF WALES
MANUFACTURERS OF DAIMLER AND JAGUAR CARS
JAGUAR CARS LIMITED COVENTRY

XJ6

SERVICE MANUAL

VOLUME 4

Contains Sections

74. WHEELS AND TYRES

76. BODY

77. BODY REPAIR

80. HEATING AND VENTILATION SYSTEM

82. AIR CONDITIONING

84. WINDSCREEN WIPERS AND WASHERS

86. ELECTRICAL

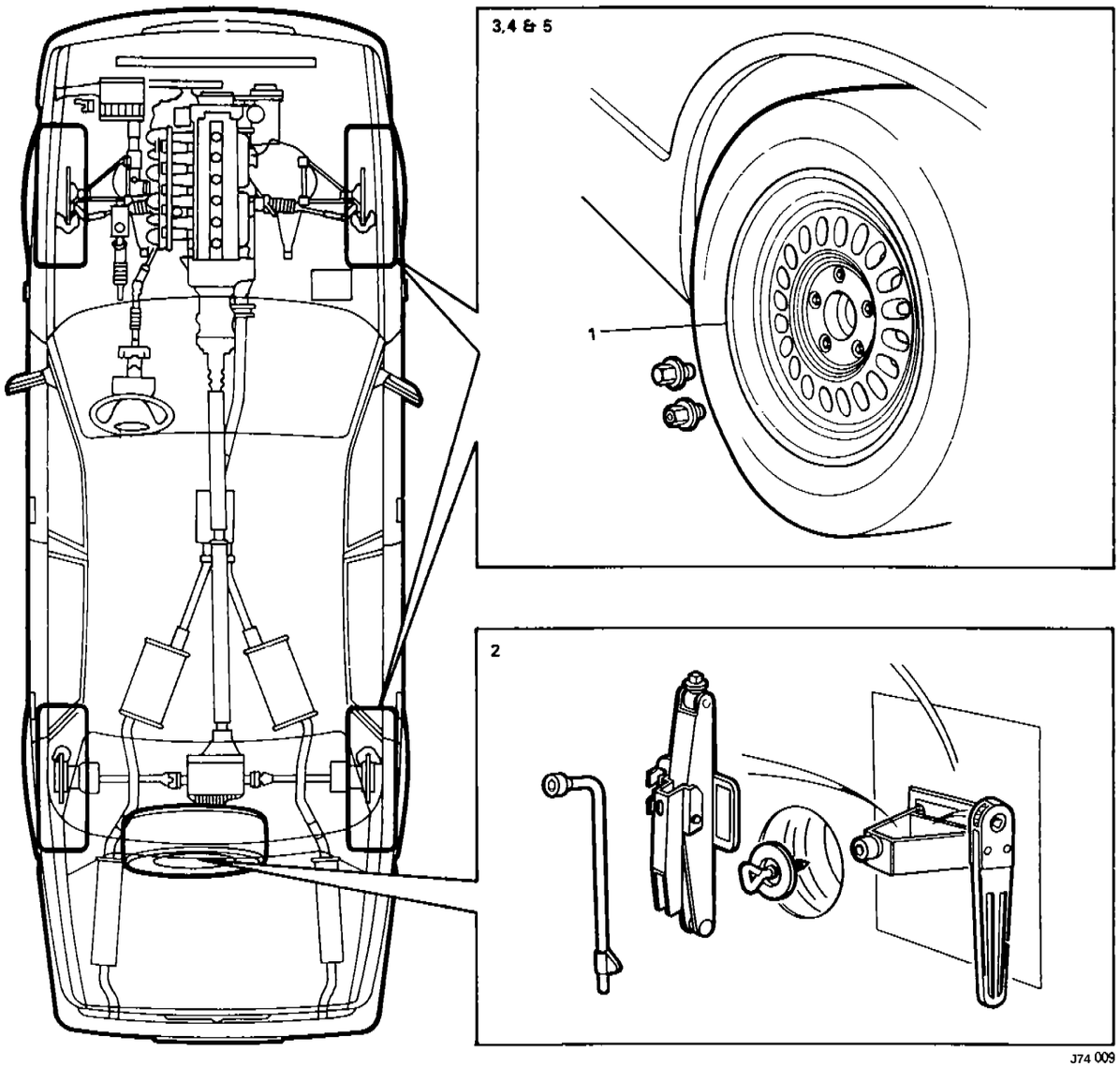
88. INSTRUMENTS

Published by Technical Publications Jaguar Cars limited
Publication Part No JJM 10 04 05 / 40

CONTENTS

DESCRIPTION	OPERATION	OPERATION No	PAGE No
INDEX	ILLUSTRATED	74.00.00	74-02
ROAD WHEEL - ONE	REMOVE AND REFIT	74.20.01	74-19
SPARE WHEEL AND TOOL KIT	STOWAGE	74.00.00	74-20
TYRES - 90MY	DATA/PRESSURES	74.00.00	74-04
TYRES - 91MY	DATA/PRESSURES	74.00.00	74-06
TYRES	DESCRIPTION	74.00.00	74-07
TD TYRES	DESCRIPTION	74.00.00	74-10
WHEELS AND TYRES	TORQUE FIGURES	74.00.00	74-11
WHEELS	DESCRIPTION	74.00.00	74-12

2000C


3,4 & 5
1
2
J74 009

ILLUSTRATED INDEX – KEY

ITEM No	DESCRIPTION	OPERATION No	PAGE No	VOLUME
1	ROAD WHEEL.....	74.20.01	74-19	4
2.....	SPARE WHEEL **AND** TOOL KIT	74.00.00	74-20	4
3.....	WHEELS **AND** TYRES	74.00.00	74-04	4
4	WHEELS **AND** TYRES	74.00.00	74-07	4
5	WHEELS **AND** TYRES	74.00.00	74-12	4

90MY TYRES

DATA/TYRE PRESSURES 74.00.00

North American Vehicles

Type/Size	Pirelli P5 205/70 VR 15 Cinturato (Tubeless)
Cold Inflation Pressure - Front	33 lbf/in^2 (2.32kgf/cm^2, 228kPa; 2.27bar)
- Rear	36 lbf/in^2 (2.53kgf/cm^2, 248kPa; 2.48bar)

Note: Pressures may be reduced by 6 lbf/in^2 (0.42kgf/cm^2, 41kPa, 0.41bar) on front and rear tyres to obtain maximum comfort, provided the speed does not exceed 100mph (160 km/h).

Rest of the **World (ROW) Vehicles**

Type/Size	Dunlop TD SP Super Sport D7, 220/65 VR 390 or Michelin TDXV 220/65 VR 390 (Tubeless)
Cold Inflation Pressure - Front	34lbf/in^2 (2.39kgf/cm^2, 235kPa, 2.35bar)
- Rear	34lbf/in^2 (2.39kgf/cm^2, 235kPa, 2.35bar)

Note: Pressures may be reduced by 8 lbf/in^2 (0.56kgf/cm^2, 55kPa, 0.55bar) on front and rear tyres to obtain maximum comfort, provided the speed does not exceed 100 mph (160 km/h).

Replacement tyres of different specifications and/or tread pattern, should not be fitted in mixed form.

SNOW TYRES

North American Vehicles

Type/Size (complete sets only)	Pirelli M&S Winter 190 215/65 R 15 T
Cold Inflation Pressure (maximum speed 100mph (160km/h))	
- Front	27 lbf/in^2 (1.90kgf/cm^2, 186kPa, 1.86bar)
- Rear	30 lbf/in^2 (2.11kgf/cm^2, 207kPa, 2.07bar)
Cold Inflation Pressure (maximum speed 120mph (190km/h))	
- Front	33 lbf/in^2 (2.32kgf/cm^2, 228kPa, 2.28bar)
- Rear	36 lbf/in^2 (2.53kgf/cm^2, 248kPa, 2.48bar)

Rest of the World (ROW) Vehicles

Type/Size (complete sets only)	Dunlop TD SP 88 M&S (Tubeless)
Cold Inflation Pressure (maximum speed 100mph (160km/h))	
- Front	26 lbf/in^2 (1.83kgf/cm^2, 179kPa, 1.79bar)
- Rear	28 lbf/in^2 (1.97kgf/cm^2, 193kPa, 1.93bar)
Cold Inflation Pressure (maximum speed 120mph (190km/h))	
- Front	34 lbf/in^2 (2.39kgf/cm^2, 235kPa, 2.35bar)
- Rear	34 lbf/in^2 (2.39kgf/cm^2, 235kPa, 2.35bar)

Note: Snow chains may be fitted to rear wheels only. Use Jaguar snow chains available from the Jaguar accessory range (Champion 2612-SM or Shur-grip).

Maximum speed with snow chains 30mph(48km/h).

Tyres may be fitted with studs provided maximum speed does not exceed 90mph (145km/h). Studs must be of the parallel shank type, 10mm long, 8mm in diameter, single flange.

The use *of* studs is not permitted in certain countries. Check with local legislation.

91MY TYRES - STANDARD FIT AND OPTIONS

INTRODUCTION

Pirelli 225/65 VR 15 (225/65 R 15 99V) are standard fit tyres from 91MY for all models and markets except USA, which retains the Pirelli P5 Cinturato (Tubeless) 205/70 VR 15 as standard fit.

The Dunlop TD Super Sport D7 220/65 VR 390 tyres can still be supplied as an optional item for vehicles with alloy teardrop wheels. (See 90MY specification, page 74-04, for inflation pressures).

A new sports option wheel is available from 91MY and is fitted with a Pirelli 225/55 ZR 16 P600.

DATA/TYRE PRESSURES **74.00.00**

Rest of the World (ROW) Vehicles

Type/Size	Pirelli 225/65 VR 15 (225/65 R 15 99V) Pirelli 225/55 ZR 16 P600.
Cold Inflation Pressure	
- Front	32 lbf/in^2 (2.24kgf/cm^2, 220kPa, 2.21 bar)
- Rear	34 lbf/in^2 (2.38kgf/cm^2, 234kPa, 2.34bar)

Note: Pressures may be reduced by 6 lbf/in^2, (0.42kgf/cm^2, 41kPa, 0.41bar) on front and rear tyres to obtain maximum comfort, provided the speed does not exceed 100mph (160 km/h).

Replacement tyres *of* different specifications and/or tread pattern, should not be fitted in mixed form.

TYRES - DESCRIPTION 74.00.00

General

Tyres of the correct type, dimensions and at the correct cold inflation pressures are an integral part of the vehicle's design. Regular maintenance of tyres is an essential contribution to road safety and correctly inflated tyres in good condition will assist in retaining optimum road-holding, steering and braking qualities.

Tyres of the same type and size have widely varying characteristics depending upon manufacturer. It is strongly recommended that only tyres of the same make and type are fitted to all wheels.

The radial ply tyres specified are designed to meet the high speed performance of which this car is capable.

Pressure

The tyre inflation pressures specified provide optimum ride and handling characteristics for all normal conditions.

Tyre pressures should be checked and, if necessary, adjusted weekly with the tyres cold i.e. not immediately following use as pressure increases with temperature due to road friction. 'Bleeding' a warm tyre to the recommended pressure will result in under-inflation which can be both dangerous and depreciate tyre life. Pressure loss with time is normal, but a thorough investigation should be performed if a pressure loss in excess of 2 lbf/in^2 (0.14kgf/cm^2, 14kPa, 0.14 bar) is encountered during a period of one week or less.

It is an offence in the UK to use a vehicle on public roads with tyres improperly inflated. Furthermore, incorrect inflation accelerates wear and causes excessive heating which can result in tyre failure due to blow out.

CAUTION: When inflating a tyre. it is important to ensure that a pressure of 40 lbf/in^2 (2.8 kgf/cm^2, 310kPa, 3.1 bar) is not exceeded otherwise serious tyre damage may result.

Wear

All tyres fitted as standard have a tread wear indicator (Fig. 1) moulded into their tread pattern to provide indication when the tread depth remaining is 1.6 mm (0.063 in). Each indicator appears on the tread surface as bars which connect the tread pattern across the full width *of* the tyre.

It is illegal in the UK and certain other countries to continue using tyres after the tread has worn to less than 1mm (0.039 in) over three quarters of the tread width around the entire circumference of the tyre.

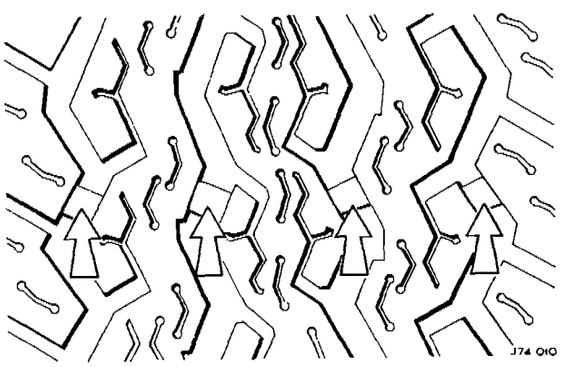


Fig. 1

The properties of many tyres alter progressively with wear. In particular, 'wet grip' and aquaplaning resistance properties are gradually, but substantially, reduced. Extra care and speed restriction should therefore be exercised on wet roads as the effective tread depth diminishes.

When replacement of tyres is necessary it is preferable to fit a complete vehicle set. Should either front or rear tyres only, show excessive wear, new tyres must be fitted to replace worn ones. Under no circumstances interchange tyres from side to side, front to rear or vice versa as individual tyre wear produces unique characteristics depending upon their position. If the position is changed after wear has occurred, the performance of the tyre will be adversely affected.

Damage

Excessive localised distortion, sometimes caused by severe contact with kerbs or stones can cause the tyre casing to fracture and may lead to premature tyre failure. Tyres should, therefore, be periodically examined and any tyre having distortion, cracks and/or cuts should be replaced. In addition, all tread imbedded objects, such as stones and glass, should be withdrawn and all contamination, i.e. oil and grease removed using a suitable solvent.

CAUTION: **Paraffin** (kerosene) must not be **used as a cleansing agent on tyres.**

Heat

Tyres should not be subjected to excessive heat such as that inherent *of* paint drying/baking ovens. It is recommended therefore, that all wheels be removed or at least the tyres be relieved *of* vehicle body weight.

Repairs

It is recommended that damaged tyres are renewed and not repaired in view of the high performance capability of the vehicle.

Valves

When a new tubeless tyre is fitted, the valve should be renewed.

Tyre **Use After** Vehicle **Storage**

After a long period of vehicle standing, tyres may become locally distorted with a flat area. This will cause an uneven ride for a few miles until the tyres have warmed up and the 'flat' rounds off.

'WINTER (SNOW) TYRES

The tyres fitted as original equipment are designed with a rubber mixture, tread pattern and width specially suited for high speeds in normal road conditions, but they are less suitable for winter conditions. The use of winter tyres will considerably improve the vehicle's handling.

Winter tyres must be used in vehicle sets, i.e. fitted on all four wheels. When fitted with winter tread tyres, the vehicle should not be driven at speeds in excess of the tyre speed category symbol as moulded on the tyre.

SNOW CHAINS

Snow chains may be fitted to rear wheels only.

Remove the snow chains immediately upon the road being clear of snow.

Maximum speed with snow chains fitted - 30mph (48km/h).

Tyres may be fitted with studs provided maximum speed does not exceed 90mph (145km/h). Studs must be of the parallel type, 10mm long, 8mm diameter single flange; the use of studs is not permitted in certain countries, check local legislation.

Snow chains must **only be** used with the recommended winter tyres.

USA GRADINGS

The following information relates to the tyre grading system developed by the national Highway Traffic Safety Administration which grades tyres by tread wear, traction and temperature performance.

Treadwear

The treadwear grade is a comparative rating based on the wear rate of the tyre when tested under controlled conditions on a specified government test course. For example, a tyre graded 150 would wear one and a half times less on the government course than a tyre graded 100. The relative performance of the tyres depends upon the actual conditions of their use and may depart significantly from normal due to variations in driving habits, service practices and differences in road characteristics and climate.

Traction - A, B, C

The tractions grades, from highest *to* lowest, are **A,** B and C and they represent the tyres ability to stop in wet conditions measured on specified government test surfaces of asphalt and concrete.

WARNING: THE TRACTION GRADE IS BASED ON BRAKING (STRAIGHT AHEAD) TRACTION TESTS AND DOES NOT INCLUDE CORNERING (TURNING) TRACTION.

Temperature - A, B, C

The temperature grades are **A** (the highest), B and C, and they represent the tyre's resistance to the generation of wear and its ability to dissipate heat when tested under controlled conditions on a specified indoor laboratory test wheel. Sustained high temperature can cause the material of the tyre *to* degenerate and reduce tyre life, and excessive temperature can lead to sudden tyre failure. Grade C corresponds to a level of performance which all passenger cartyres must meet under Federal Motor Vehicle Safety Standard No. 109. Grades B and **A** represent higher levels of performance on the laboratory test wheel than the minimum required by law.

WARNING: THE TEMPERATURE GRADE IS ESTABLISHED FOR A TYRE THAT IS PROPERLY INFLATED AND NOT OVERLOADED. EXCESSIVE SPEED, UNDERINFLATION, OR EXCESSIVE LOADING, WHETHER SEPARATELY OR IN COMBINATION. CAN CAUSE HEAT BUILD UP AND POSSIBLE TYRE FAILURE.

THE TD TYRE (where fitted)

DESCRIPTION 74.00.00

The TD tyre offers the benefits of the radial assembly with the added safety and security *of* limited run-on capability in the event of a deflation.

This can assist in the control of the vehicle to the nearest point where the wheel can be fitted in safety.

As an essential preliminary a new international standard of rim dimensions has been developed and adopted by the European Tyre and Rim Technical Organisation (STRTO). The rim sizes covered are 290, 315, 340, 365, 390, 415mm diameter rims incorporating the Denloc groove allowing fitment of TD tyres.

How it works

The TD wheel incorporates two grooves running circumferentially around the bead seats. The tyres have specially extended bead toes which fit into these grooves. In the event of deflation, the reinforced bead toes are held firmly in place by these grooves, thereby helping to prevent the tyre from leaving the rim.

Both tyre and road wheel are made to metric dimensions, in section width and wheel diameter. This is a safety precaution to prevent the fitting of a conventional tyre to the TD wheel and conversely of a TD tyre to a conventional wheel.

It should be noted that a TD tyre cannot be fitted to a normal wheel.

In a conventional radial tyre, the bead is designed to fit inside a vertical rim flange; the casing cords are forced to curve outwards above the flange before curving inwards again, thus forming an unnatural 'S' shape. The secret of the TD principle lies in both the unique radial construction and the rim contour which allow the casing cords to follow a natural 'C' shaped flexing curve. The rim flange is inclined outwards at an angle parallel to the natural line of the casing cords.

The advantages of the new TD tyres stem from their unique construction which distributes the stresses evenly around the casing. The natural flexing curve permits the use of low aspect ratios without the usual penalty of ride harshness.

The TD Tyres are manufactured to the very high quality standards expected from all tyres and give the following benefits:

Superb grip and performance

The very wide and distinctive tread patterns put a large area of rubber on the road for maximum grip. Because of the unique construction, a very bold tread pattern with wide channels can be used without causing rapid and uneven wear often associated with this type of pattern. Water clearance is excellent, giving safe, sure grip in the wet.

Precise handling

The whole TD range with its low, wide profile gives improved stability and precise steering control.

Even Wear

The equalized stresses resulting from the natural flexing curve, allied to the TD low profile casing, result in remarkably even tread wear giving high mileage.

Low rolling resistance and fuel economy

Extensive research has proved that the combination of the TD construction with its low aspect ratio on the special rim, provides the optimum in rolling resistance, a vital factor in fuel economy.

FITTING AND REMOVAL

General *Notes*

The TD is fitted and removed in the conventional way using the standard fitting machinery. The following procedures should be used as a guide only. TD tyres must be fitted to the appropriate size of TD rim.

Removal

Deflate the tyre by removing the valve core.

Unseat, in turn, both tyre beads with a pneumatic unseating tool fitted with a broad blade. Ensure that the edge of the blade is free from any rough edges.

Keep the blade close to the wheel flange.

Apply a suitable lubrication to the rim flanges and tyre bead area on both sides *of* the assembly.

Clamp the wheel to the fitting machine and roll off the tyre beads in turn, following the machine manufacturer's operating instructions. Take care not to damage the tyre bead location 'toe' during this process.

Fitting

Confirm that a suitable valve and core are correctly fitted to the wheel rim.

Apply a suitable lubricant to both bead and flange areas of the wheel, and both beads of the tyre.

Clamp the wheel to the fitting machine and roll on each bead in turn, following the machine manufacturer's operating instructions. Take care not to damage the tyre bead location 'toe' during this process.

The TD tyre can only be fitted tubeless. No suitable design of tube is available or foreseen.

As with other modern rim designs incorporating bead retention safety features (humps, for example), it is strongly recommended that a fitting machine is used for all fitting and removal. Use of hand levers for removal is NOT recommended.

Unclamp the wheel and inflate the tyre to 50 lbf/in^2 (3.5 bar; 350kPa), ensuring that the beads remain parallel to the rim groove. Should difficulty be experienced in securing location of the beads, remove the valve *core.* Re-inflate the tyre, replacing the valve core when the beads *of* the tyre have located against the wheel flanges. Check this by confirming that the tyre fitting line is concentric with the wheel flange. Finally, reset the tyre pressure to the recommended specification and remove any excess tyre lubricant.

TORQUE FIGURES

Screw clamp to spare wheel ***13-16Nm***
Jack to mounting bracket ***7-14Nm***
Spare *wheel* ***fixing*** *bracket to body* ***22-28Nm***
Valve ***to*** *wheel* ***3.5-4.5Nm***
Wheel nut to wheel ***stud*** *(steel wheel)* ***65-85Nm***
Wheel nut to wheel ***stud*** *(alloy wheel)* ***88-102 Nm***

SPANNER SIZES

13mm
22mm

2000C

WHEELS

91MY Standard Fit and Options

STEEL WHEEL

Size	7" x 15"
Tyre Type/Size	Pirelli 225/65 VR 15 (225/65 R 15 99 V)

The 91MY steel wheel is manufactured by Dunlop and incorporates a one piece wheel trim. The wheel is held on with wheel nuts and the wheel trim clips over the top. This differs from the 90MY steel wheel manufactured by Michelin, which has the wheel trim held on by the wheel nuts and is **of** a different style.

The steel wheel is standard fit for the basic model XJ6 for all markets except **USA.**

The wheel trim can be removed using the screwdriver provided in the vehicle toolbox as a lever, or similar instrument. To refit the wheel trim, position the wheel trim on the wheel with the location peg on the **back** of the wheel trim inserted into the hole adjacent to the tyre valve. Push the wheel trim firmly into position.

TEARDROP ALLOY WHEEL

Size	7" x 15"
Tyre Type/Size	Pirelli 225/65 VR 15 (225/65 **R 15** 99 V) Pirelli 205/70 **VR** 15 - **USA**

The Teardrop alloy wheel is standard fit for the XJ6-Sovereign in all markets, and an optional fit for the XJ6 in all markets except North America. The alloy wheel is standard fit for the basic **XJ6** in the **USA.**

There are two types of wheel nut cover for the Teardrop alloy style wheels, a perforated wheel nut cover and a flush wheel nut cover. The wheel nut cover can be removed using the screwdriver provided in the vehicle toolbox, or similar instrument. To refit the perforated style **wheelnut** cover, align the holes with the wheel nuts, then push the cover firmly into position on the **wheel.** To refit the flush style wheel nut cover, push the cover firmly into position on the wheel.

The cast alloy road wheels are covered with a protective coating. **To** prevent corrosion, **it** is essential that this coating is not damaged. To clean the wheels use warm soapy water; stubborn stains can be removed using **a** soft brush or by using **a** proprietary alloy wheel cleaner.

When removing or fitting tyres, only equipment utilizing spigot **or** stud hole clamping must be used. The equipment must not have any moving parts which contact the wheel, and tyre levers must not be used.

TEARDROP ALLOY WHEEL (TD TYPE)

Size	189mm x 390mm
Tyre Type/Size	Dunlop TD **SP** Super Sport D7, 220/65 **VR** 390 TD or Michelin TDXV, 220/65 VR 390

The TD Teardrop Alloy wheel is an optional item after 91MY for all models and markets except North America.

Both tyre and road wheel are made to metric dimensions, in section width and wheel diameter. This is a safety precaution to prevent the fitting of a conventional tyre to the TD road wheel and conversely *of* **a** TD tyre to a conventional wheel.

It should be noted that a TD tyre cannot be fitted to a normal wheel or **a** normal tyre to **a** TD wheel.

ROULETTE ALLOY WHEEL

Size	7" x 15"
Tyre Type/Size	Pirelli 225/65 VR 15 (225/65 R 15 99 V)
	Pirelli 205/70 VR 15 - **USA**

The Roulette style alloy wheel is a standard fit item for XJ6-Daimler and Vanden Plas derivations in all markets from 91MY.

The Roulette wheel incorporates a diecast hubcap with a rubber O-ring type seal round the outside to ensure an optimum fit. The hubcap clips into the wheel recess on one side using the hooks shown on the back of the hubcap in Fig. **1,** and is locked into position using **a** bright chrome finished **Allen** type socket head locking screw (1 Fig.2).

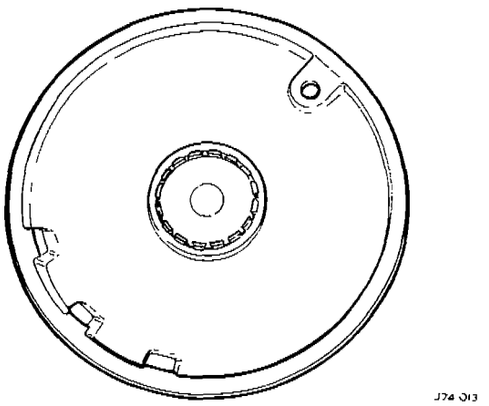


Fig **1**

To remove the hubcap, unscrew the captivated bolt (1 Fig. 2) securing the diecast hubcap (2 Fig. 2) using the 6mm Allen key which is clipped to the spare wheel mounting bracket in the luggage compartment. Firmly hold the captivated bolt and pull outwards to remove the hubcap from the wheel.

To replace the hubcap, ensure that the rubber O-ring type seal is correctly located around the diecast hubcap. Position the hubcap on the wheel with the hook located in the slots adjacent to the tyre valve and ensure that the captivated screw is aligned with the threaded hole. Push the hubcap into position and secure with the captivated screw, using the 6mm Allen key to tighten. Replace the Allen key in the clip on the spare wheel mounting bracket after use.

The locking screw is part of the hubcap assembly and is held captive by a circlip.

Note: The 6mrn Allen key to remove the **hubcap** locking screw is attached to the jack in the luggage compartment by means **of** a spring clip. If the vehicle is supplied with **a** toolkit, **it** is recommended that the key be kept in the toolkit for convenience.

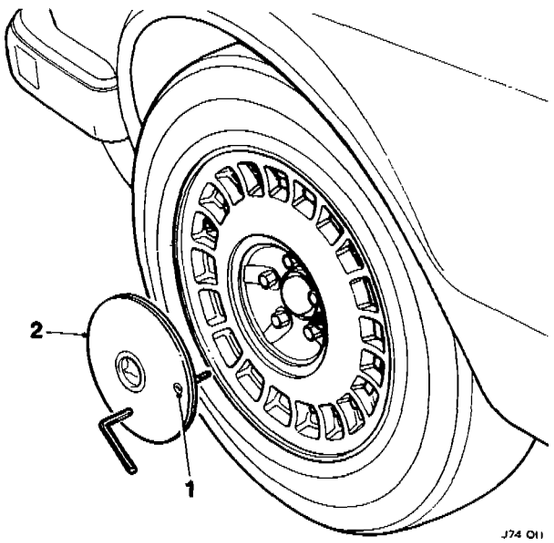


Fig 2

Replacement hubcaps are supplied without the centre badge. Two different types of centre badge are available (fig. 1) and must be correctly aligned before push fitting into the centre of the hubcap.

The cast alloy road wheels are covered with a protective coating. To prevent corrosion it is essential that this coating is not damaged. To clean the wheels use warm soapy water, stubborn stains can be removed using a soft brush or by using a proprietary alloy wheel cleaner.

When removing or fitting tyres, only equipment utilizing spigot or stud hole clamping must be used. The equipment must not have any moving parts which contact the wheel, and tyre levers must not be used.

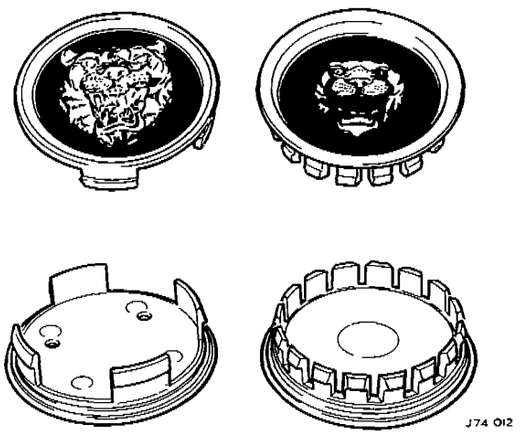


Fig 1

LATTICE (SPORTS) ALLOY WHEEL

Size 8" x 16"
Tyre Type/Size Pirelli 225/55 ZR 16 P600

The Lattice (Sports) wheel is available from **91MY** as part of the Sports suspension package, it is an option for all models and markets except North America. It is a forged wheel with lattice design fitted with the Pirelli 225/55 ZR 16 **P600** 8" x 16" tyre.

When changing the sports road wheels, the centre badge must be transferred to the replacement wheel. After removing the road wheel, carefully remove the badge and press fit to the replacement wheel.

MISALIGNMENT AND ROAD CAMBER EFFECTS

It is important that correct wheel alignment be maintained. Misalignment causes tyre tread to be scrubbed off laterally because the natural direction of the wheel differs from that of the car.

A sharp 'fin' protrusion on the edge of each pattern rib is a sure sign of misalignment and it is possible to determine from the position of the 'fins' whether the wheels are toeing in or toeing out.

'Fins' on the inside edges of the pattern ribs, particularly on the nearside tyre, indicate toe-in. 'Fins' on the outside edges, particularly on the offside tyre, indicate toe-out.

With minor misalignment, the evidence is less noticeable and sharp pattern edges may be caused by road camber even when the wheel alignment is correct. In such cases it is better to make sure by checking with an alignment gauge. Road camber affects the direction of the car by imposing a side thrust and, if left to follow it's natural course, the car will drift towards it's nearside. This is instinctively corrected by a steering towards the road centre and, as a result, the car runs crabwise as illustrated in an exaggerated form in (Fig. 1). The diagram shows why nearside tyres are very sensitive to too much toe-in and offside tyres to toe-out.

It also shows why sharp 'fins' appear on one tyre but not on the other, and why the direction of misalignment can be determined by noting the position of the 'fins'. Severe misalignment produces clear evidence on both tyres.

The front wheels on a moving car should be parallel. Tyre wear can be affected noticeably by quite small variations from this condition. It will be noted from the diagram that even with parallel wheels, the car is still out of line with its direction of movement, but there is less tendency for the wear to be concentrated on one tyre.

The near front tyre sometimes persists in wearing faster and more unevenly than the other tyres, even when the mechanical condition of the car and tyre maintenance are satisfactory. The more severe the average road camber, the more marked this tendency will be.

Fig. 2 shows the wheels 'toed-out' in motion. The RH front tyre will wear faster.

Fig. 3 shows the wheels 'toed-in' in motion. The LH front tyre will wear faster.

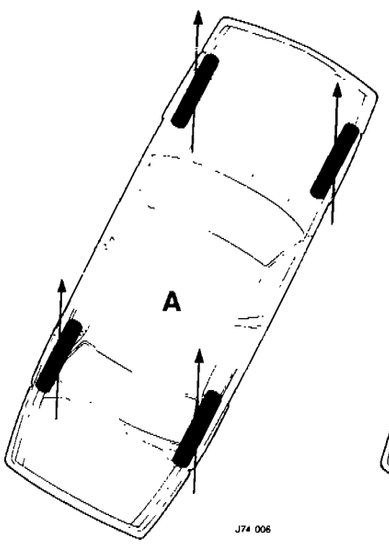


Fig 1

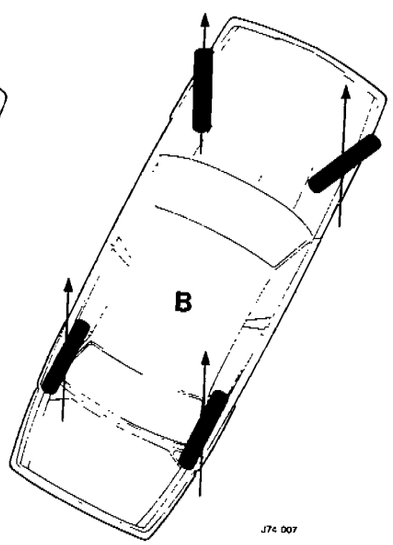


Fig 2

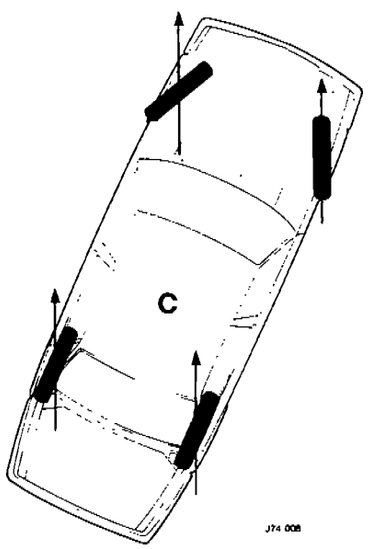


Fig 3

ALIGNMENT PRECAUTIONS

Wheels and tyres vary laterally within their manufacturing tolerances, or as a result of service, and alignment figures obtained without moving the car are unreliable. The following precautions should, therefore, be observed:

1. The car should have come to rest from a forward movement. This ensures, as far as possible, that the wheels are in natural running positions.

2. It is preferable for alignment to be checked with the car laden.

3. With a conventional base bar tyre alignment gauge, measurements should be taken in front of and behind the wheel centres at the same position on the tyre and rim flanges. This is achieved by marking the tyres where the first reading is taken and moving the car forwards approximately half a road wheel revolution before taking the second reading at the same points. With an optical gauge, two or three readings should be taken with the car moved forwards to different positions - 180° road wheel turn for two readings and 120° for three readings. An average figure should then be calculated.

TYRE AND WHEEL BALANCE

Static Balance

For smooth riding, precise steering and the avoidance of high speed 'tramp' or 'wheel hop', all tyres are balance checked to predetermined limits. To ensure the best degree of tyre balance, the covers are marked with white spots on one bead and these indicate the highest part of the cover.

Some tyres are slightly outside standard balance limits and are corrected before issue by attaching special patches to the inside covers at the crown. The patches contain no fabric and do not affect the local stiffness of the tyre and should not be mistaken for repair patches. They are embossed 'Balance Adjustment Rubber'.

The original degree of balance is not necessarily maintained and it may be affected by uneven tread wear, cover and tube repair, tyre removal or refitting, or by wheel damage or eccentricity. The car may also become sensitive to unbalance due to normal wear of moving parts. If roughness or high speed steering troubles develop and mechanical investigation fails to disclose a possible cause, wheel and tyre balance should be suspected.

WARNING: **IF BALANCING EQUIPMENT IS USED TO DYNAMICALLY BALANCE THE ROAD WHEELS, ALWAYS JACK BOTH REAR WHEELS OFF THE GROUND WHEN REAR WHEEL BALANCING, OTHERWISE DAMAGE MAY BE CAUSED TO THE DIFFERENTIAL. THIS IS DOUBLY IMPORTANT IN THE CASE OF CARS FITTED WITH A 'POWR-LOK' DIFFERENTIAL, AS IN ADDITION TO POSSIBLE DAMAGE TO THE DIFFERENTIAL, THE CAR MAY DRIVE ITSELF OFF THE JACK OR STAND.**

Dynamic Balance

Static unbalance can be measured when the tyre and wheel assembly is stationary. There is another form known as dynamic unbalance **which** can be detected only when the assembly is revolving.

There may be no heavy spot, i.e. there is no natural tendency for the assembly to rotate about its centre due to gravity, but the weight may be unevenly distributed **each** side of the centre tyre line. Laterally, the eccentric wheels give the same effect. During rotation, the offset weight distribution sets up a rotating couple which tends to steer the wheel to the right and left alternatively.

Dynamic unbalance of the tyre and wheel assemblies can be measured on suitable tyre balancing equipment, and corrections implemented. Where **it** is clear that a damaged wheel is the primary cause of severe unbalance, **it** is advisable for the wheel to be replaced.

TORQUE FIGURES

Clamp screw clamp** to **spare wheel 13-16Nm
Jack** to **mounting bracket 7-14Nm
Spare wheel fixing bracket** to **body 22-28Nm
*Valve to **wheel 3.5-4.5Nm***

SPANNER SIZES

13mm

IRREGULAR WEAR AND TYRE DAMAGE

Incorrect Tyre Pressure

Under-inflation (A Fig. 1) is a frequent cause of severe tyre damage, resulting from the excessive flexing of the tyre. Under inflation builds up internal heat which eventually weakens the casing. It **also** causes rapid and irregular tread wear.

Over-inflation (C Fig. 1) leads to shortened tyre life with tread wear concentrated on the centre section in contact with the road. The cushioning effect of the tyre is impaired, resulting in a hard and uncomfortable ride. The tyre is **also** susceptible to impact fracture and casing damage. Correctly inflated tyres are shown in (B Fig. 1).

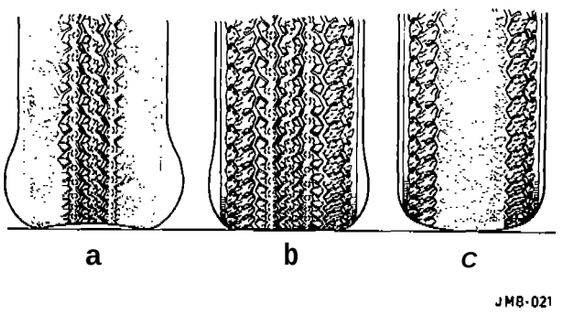


Fig 1

Misalignment Wear

Rasped and feathered tread condition is caused by wheel misalignment and results in very rapid tread wear (Fig. 2).

'Fins' on the inside edges of the pattern ribs, Particularly on the nearside tyre, indicate toe-in. 'Fins' on the outside edges, particularly on the offside tyre, indicate toe-out.

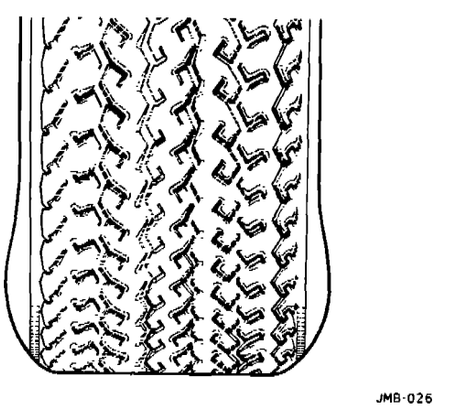
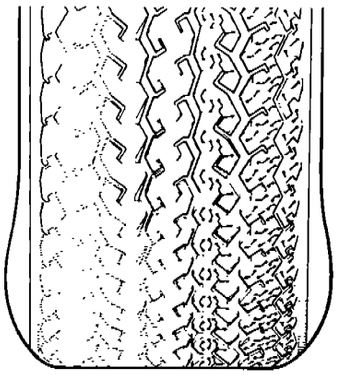


Fig 2

Camber Wear

One shoulder more severely worn than the other (Fig. 1). This type of wear is accentuated by mechanical irregularities of steering or suspension, or by high speed cornering.



JMB·022

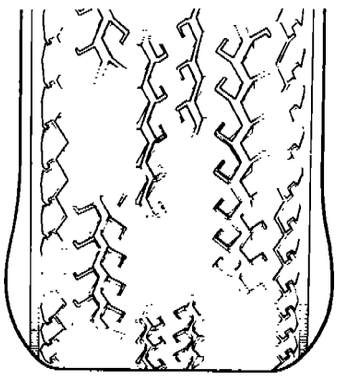
Fig I

Neglected Cut

Damage through accidental cuts or penetrations will extend in use due to continued flexing and/or ingress of moisture and road matter.

Irregular Wear

Caused by mechanical irregularity of the vehicle (Fig. 2) as, for example, worn bearings, steering joints or badly adjusted brakes.



JMB·025

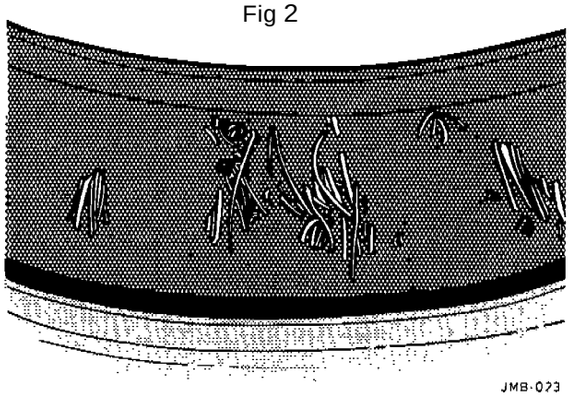
Fig 2

Age Deterioration

Cracking and crazing of the tread and sidewall rubber, sometimes accompanied by carcase deformation. An indication that the tyres have been in service for a very long time.

Deflation Damage

Breakdown of the tyre casing structure which can arise from under-inflation, overloading or running on a flat tyre (Fig 3).



JMB·023

Fig 3

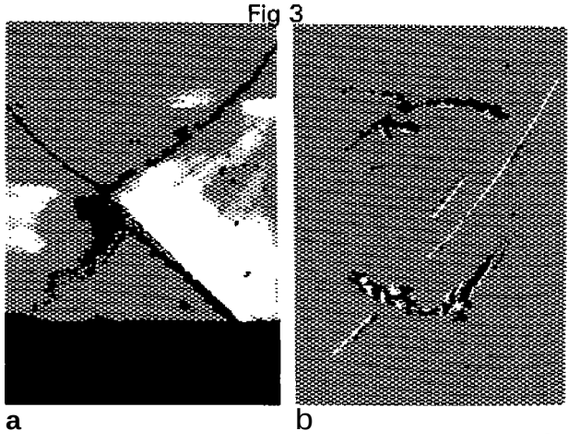
Impact Fracture

Resultant damage from impact fractures (Fig. 4) is not always visible externally and, therefore, as a safety precaution the tyre should be removed and examined.

(a) Casing fracture caused by severe localised impact through driving over kerbs, hitting pot-holes and/or objects in the road.

(b) A double fracture caused by crushing the sidewall of the tyre between an object and the rim flange.

Note: In both instances, such damage can lead to sudden and dangerous tyre deflation some time after the impact occurred.



a b

JMB·024

Fig 4

ROAD WHEEL - ONE

REMOVE AND REFIT 74.20.01

Remove hubcap.

Slacken the road wheel nuts ¼ of a turn each.

Jack up the vehicle and place on one stand.

Remove one road wheel securing nut (1 Fig. 1), mark the road wheel relative to a stud and remove the remaining nuts.

Remove the road wheel and tyre assembly (2 Fig. 1).

Lift the replacement road wheel and tyre assembly up to the hub, align the wheel with the marked stud and secure with the nuts.

Take the weight of the vehicle with a jack, remove the axle stand, lower the vehicle and recheck the torque of the wheel nuts.

CAUTION: Do not exceed a torque of 85Nm (63 lbf.ft) where steel wheels are fitted or 102Nm (75 lbf.ft) where alloy wheels are fitted.

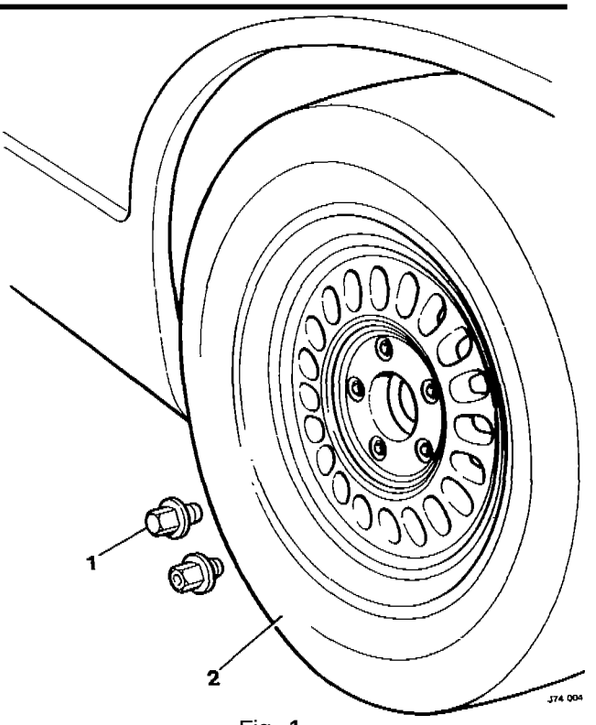


Fig. 1

DATA

TORQUE FIGURES

*Wheel **nut to wheel stud** (steel wheel) **65-85 Nm (48-63 lbf.ft)***

*Wheel nut **to wheel stud (alloy** wheel) **88-102 Nm (65-75 lbf.ft)***

SPANNER SIZES

22 mm

SPARE WHEEL AND TOOL KIT

STOWAGE 74.20.04

The spare wheel, jack and tools are stowed in the luggage compartment as illustrated (Fig. 1). The jack and wheel changing tools are located behind the spare wheel.

To remove the spare wheel, remove the carpet cover and unscrew the bolt retaining the spare wheel. Lift out the wheel. Ensure that the ratchet *and* wheel brace are correctly positioned in the securing clips prior to positioning *and* securing of the spare wheel and its cover.

The tool box (where fitted) is located at the top of the luggage Compartment adjacent to the spare wheel. It contains a selection of tools and spare bulbs.

To remove, hold down the retaining catch (below the tool box) and slide the tool box rearwards. To replace, slide the tool box back into its container until the retaining catch locks.

Note: For Daimler/Vanden Plas derivatives a 6mm Allen key is clipped to the jack bracket, which is used for removing the hubcap.

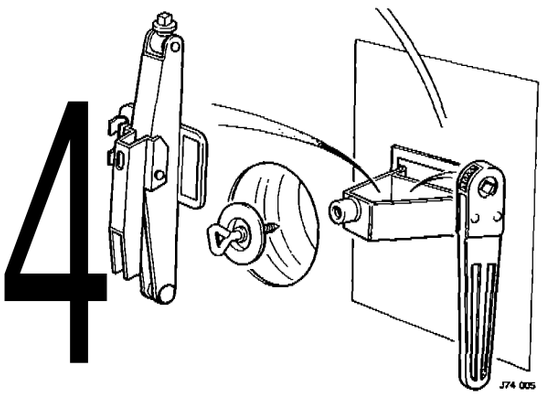


Fig. 1

DATA

TORQUE FIGURES

Spare wheel/tool stowage bracket to body 22-28Nm.

SPANNER SIZES

13mm

CONTENTS

DESCRIPTION	OPERATION	OPERATION No	PAGE No
A POST LOWER TRIM PAD	RENEW	76.13.30	76-79
ASHTRAY	RENEW	76.67.13	76-93
AUTOMATIC GEARBOX SELECTOR TRIM FINISHER	RENEW	76.25.07	76-93
B-C POST CAPPING	RENEW	76.43.34	76-80
B POST LOWER TRIM PAD	RENEW	76.13.29	76-80
B POST UPPER TRIM PAD	RENEW	76.13.28	76-80
BONNET	RENEW	76.16.01	76-24
BONNET HINGE (FEDERAL)	RENEW	76.16.11	76-29
BONNET HINGE (NON FEDERAL)	RENEW	76.16.11	76-28
BONNET HINGE VEHICLE SET (FEDERAL)	RENEW	76.16.12	76-30
BONNET HINGE VEHICLE SET (NON FEDERAL)	RENEW	76.16.12	76-28
BONNET GAS STRUT	RENEW	76.16.15	76-26
BONNET GAS STRUT-VEHICLE SET	RENEW	76.16.16	76-26
BONNET INSULATION PAD	RENEW	76.16.06	76-14
BONNET LOCK	RENEW	76.00.00	76-25
BONNET SEALING RUBBER-REAR	RENEW	76.16.04	76-25
BONNET STRIKER ASSEMBLY	RENEW	76.16.24	76-25
BOOT FLOOR CARPET	RENEW	76.19.30	76-68
BOOT FRONT LINER	RENEW	76.19.31	76-68
BOOT LID	RENEW	76.19.01	76-63
BOOT LID ADJUST ON STRIKER	ADJUST	76.19.04	76-62
BOOT LID GAS STRUT	RENEW	76.19.27	76-64
BOOT LID HINGE - VEHICLE SET	RENEW	76.19.28	76-67
BOOT LID LOCK BARREL	RENEW	76.19.19	76-66
BOOT LID LOCK MECHANISM	RENEW	76.19.25	76-64
BOOT LID LOCK STRIKER	RENEW	76.19.12	76-66
BOOT LID SEAL	RENEW	76.19.06	76-63
BOOT LID STRUT PIVOT BOLTS	RENEW	76.00.00	76-64
BOOT LID SEAL TREAD PLATE	RENEW	76.19.09	76-67
BONNET LOCK CONTROL CABLE	RENEW	76.16.29	76-26
BONNET LOCK CONTROL CABLE ASSEMBLY-VEHICLE SET	RENEW	76.16.35	76-27
BONNET LOCK RELEASE HANDLE	RENEW	76.16.30	76-27
BOOT LOCK RELEASE TRIGGER HANDLE	RENEW	76.19.15	76-65
BOOT LOCK FINISHER	RENEW	76.43.31	76-65
BOOT REAR LINER	RENEW	76.19.22	76-67
BOOT SIDE LINER-LEFT HAND	RENEW	76.19.22	76-68
BOOT SIDE LINER-RIGHT HAND	RENEW	76.19.23	76-69
BOOT VENTILATOR OUTLET	RENEW	80.15.66	76-66
BUMPER FRONT	RENEW	76.22.08	76-15
BUMPER FRONT ASSEMBLY	OVERHAUL	76.22.09	76-15
BUMPER REAR-ASSEMBLY	RENEW	76.22.15	76-47
BUMPER REAR-ASSEMBLY	OVERHAUL	76.22.18	76-47
CANTRAIL CRASH ROLL	RENEW	76.13.10	76-81
CONSOLE ASHTRAY	RENEW	76.67.18	76-81
CONSOLE ASSEMBLY	RENEW	76.25.01	76-81
CONSOLE FINISHER - AUTOMATIC	RENEW	76.25.19	76-82
CONSOLE FINISHER - MANUAL	RENEW	76.25.19	76-83
CONSOLE GLOVEBOX	RENEW	76.25.16	76-82
CONSOLE GLOVEBOX LID	RENEW	76.25.18	76-82
DASH LINER DRIVERS SIDE	RENEW	76.46.11	76-83
DASH LINER PASSENGERS SIDE	RENEW	76.46.15	76-83
DOOR AIR VENT GROMMET	RENEW	80.00.00	76-83
ELECTRICALLY OPERATED FRONT SEAT	RENEW	76.70.10	76-70
ELECTRICALLY OPERATED FRONT SEAT BACK FINISHER	RENEW	76.70.09	76-71
ELECTRICALLY OPERATED FRONT SEAT CUSHION	RENEW	76.70.11	76-69
ELECTRICALLY OPERATED FRONT SEAT-RUNNER AND MOTOR	RENEW	76.70.08	76-70
EXTERIOR MIRROR	RENEW	76.10.52	76-52
FASCIA BOARD	RENEW	76.46.01	76-84
FASCIA CENTRE VENEER PANEL	RENEW	76.47.06	76-86

0051G

CONTENTS

DESCRIPTION	OPERATION	OPERATION No	PAGE No
FASCIA CLOSING PANEL - DRIVERS SIDE	RENEW	76.46.28	76-86
FASCIA CLOSING PANEL - PASSENGERS SIDE	RENEW	76.46.27	76-86
FRONT BUMPER CENTRE BLADE	RENEW	76.22.37	76-16
FRONT BEAM	RENEW	76.22.26	76-95
FRONT BEAM COVER	RENEW	76.22.20	76-94
FRONT CROSSMEMBER	RENEW	76.10.05	76-18
FRONT DOOR ARMREST	RENEW	76.34.22	76-30
FRONT DOOR GLASS	RENEW	76.31.01	76-31
FRONT DOOR GLASS CHANNEL RUBBER	RENEW	76.31.13	76-32
FRONT DOOR GLASS FRAME	RENEW	76.31.51	76-33
FRONT DOOR HANDLE	RENEW	76.58.01	76-33
FRONT DOOR INSIDE HANDLE	RENEW	76.58.20	76-34
FRONT DOOR LOCK	RENEW	76.37.12	76-35
FRONT DOOR LOCK STRIKER	RENEW	76.37.23	76-37
FRONT DOOR OUTER HANDLE OPERATING ROD	ADJUST	76.37.10	76-98
FRONT DOOR REMOTE CONTROL OPERATING CABLE	RENEW	76.37.67	76-26
FRONT DOOR SEAL	RENEW	76.40.01	76-38
FRONT DOOR TRIM PAD VENEER PANEL	RENEW	76.47.11	76-36
FRONT DOOR UPPER TRIM PAD	RENEW	76.34.02	76-38
FRONT DOOR LOWER TRIM PAD	RENEW	76.34.03	76-36
FRONT DOOR WAIST RAIL MOULDING	RENEW	76.43.04	76-37
FRONT ENERGY ABSORBING STRUT	RENEW	76.22.31	76-17
FRONT FLOOR CARPET	RENEW	76.49.02	76-72
FRONT QUARTER BUMPER	RENEW	76.22.16	76-21
FRONT QUARTER BUMPER BLADE	RENEW	76.22.73	76-23
FRONT QUARTER BUMPER LOCATING BRACKET	RENEW	76.22.20	76-22
FRONT QUARTER BUMPER MOUNTING RUBBER	RENEW	76.22.19	76-22
FRONT SEAT	RENEW	76.70.01	76-72
FRONT SEAT BELTS (91 MY)	RENEW	76.73.00	76-116
FRONT SEAT BACK FINISHER	RENEW	76.70.03	76-72
FRONT SEAT BELT ADJUSTER	RENEW	76.73.12	76-76
FRONT SEAT BELT BUCKLE UNIT	RENEW	76.73.02	76-73
FRONT SEAT BELT LEFT HAND	RENEW	76.73.10	76-73
FRONT SEAT BELT RIGHT HAND	RENEW	76.73.21	76-74
FRONT SEAT CUSHION	RENEW	76.70.02	76-74
FRONT SEAT-CUSHION COVER	RENEW	76.70.02	76-74
FRONT SEAT CUSHION SUPPORT CENTRE	RENEW	76.70.19	76-75
FRONT SEAT HEADREST	RENEW	76.70.30	76-75
FRONT SEAT HEAD REST-ELECTRICALLY OPERATED SEAT	RENEW	76.70.14	76-71
FRONT SEAT RUNNERS AND ADJUSTER ASSEMBLY	RENEW	76.70.24	76-76
FUEL FILLER CAP RETENTION MAGNET (91 MY)	RENEW	76.10.27	76-116
FUEL FILLER FLAP LATCH POST (91 MY)	RENEW	76.10.28	76-116
GEARBOX SPORT MODE SWITCH FINISHER	RENEW	76.25.09	76-97
GLOVE BOX	RENEW	76.52.03	76-87
GLOVEBOX LID	RENEW	76.52.02	76-87
GLOVEBOX LID LOCK	RENEW	76.52.08	76-88
GLOVEBOX LID VENEER PANEL	RENEW	76.47.21	76-88
GLOVEBOX MIRROR ASSEMBLY	RENEW	76.52.05	76-89
GUTTER FINISHER	RENEW	76.43.11	76-53
HANDBRAKE LEVER TRIM	RENEW	76.13.63	76-89
HEADLAMP TRIM FINISHER	RENEW	76.40.01	76-24
HEADLINING REAR FINISHER	RENEW	76.64.12	76-89
ILLUMINATED SUNVISOR ASSY	RENEW	76.10.48	76-93
ILLUMINATED SUNVISOR MIRROR ASSY	RENEW	76.10.50	76-93
INDEX	ILLUSTRATED	76.00.00	76-06
INSTRUMENT PANEL VENEER PANEL	RENEW	76.47.24	76-99
INTERIOR MIRROR	RENEW	76.10.51	76-90

0051G

CONTENTS

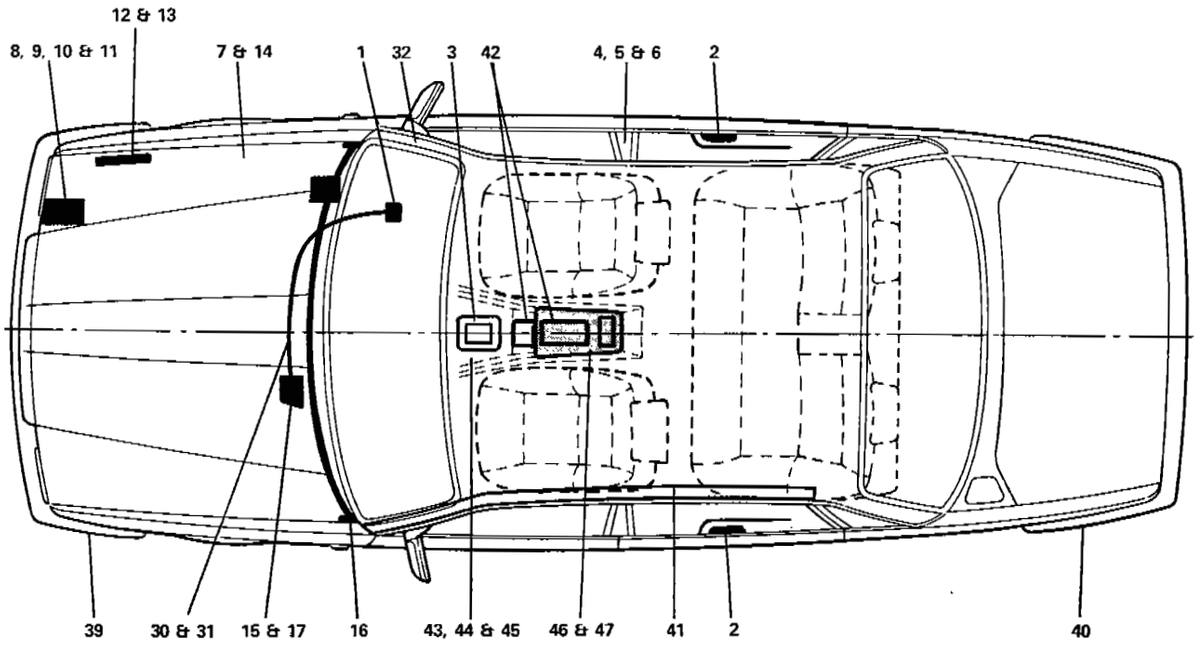
DESCRIPTION	OPERATION	OPERATION No	PAGE No
LAP BELT INERTIA REEL	RENEW	76.73.22	76-115
LOWER DOOR TRIM FRONT	RENEW	76.34.03	76-53
LOWER DOOR TRIM REAR	RENEW	76.34.06	76-53
NUMBER PLATE TRIM	RENEW	76.43.22	76-53
PASSIVE ECU	CONNECTORS	76.73.00	76-111
PASSIVE RESTRAINT	FAULT DIAGNOSIS	76.73.00	76-102
PASSIVE RESTRAINT	SERVICE CHECKS	76.73.00	76-112
PASSIVE RESTRAINT	WIRING DIAGRAM	76.73.00	76-109
PASSIVE RESTRAINT GUIDE RAIL	RENEW	76.73.33	76-114
PASSIVE RESTRAINT ECU	OPERATIONAL TEST	76.73.00	76-106
PASSIVE RESTRAINT ECU	LOGIC	76.73.00	76-107
PASSIVE RESTRAINT INERTIA REEL	RENEW	76.73.23	76-114
PASSIVE RESTRAINT MOTOR/DRIVE AND INERTIA REEL ASSEMBLIES	RENEW	76.73.27	76-113
PASSIVE RESTRAINT SYSTEM (USA ONLY)	DESCRIPTION	76.73.00	76-100
PASSIVE RESTRAINT WARNING CIRCUIT	WIRING DIAGRAM	76.73.00	76-110
PETROL FILLER FLAP	RENEW	76.10.25	76-53
RADIATOR GRILLE SURROUND	RENEW	76.55.15	76-54
RADIATOR GRILLE - VEHICLE SET	RENEW	76.55.07	76-54
RADIO CONSOLE	RENEW	76.25.15	76-93
REAR BEAM	RENEW	76.22.27	76-96
REAR BEAM COVER	RENEW	76.22.29	76-94
REAR BUMPER CENTRE BLADE	RENEW	76.22.12	76-51
REAR BUMPER CENTRE BLADE TRIM FINISHER	RENEW	76.22.14	76-52
REAR CENTRE SEAT BELT STATIC	RENEW	76.73.31	76-76
REAR DOOR ARMREST	RENEW	76.34.23	76-39
REAR DOOR GLASS	RENEW	76.31.02	76-38
REAR DOOR GLASS CHANNEL RUBBER	RENEW	76.31.14	76-40
REAR DOOR GLASS FRAME	RENEW	76.31.61	76-41
REAR DOOR HANDLE	RENEW	76.58.02	76-41
REAR DOOR INSIDE HANDLE	RENEW	76.58.19	76-42
REAR DOOR LOCK	RENEW	76.37.13	76-43
REAR DOOR LOCK STRIKER	RENEW	76.37.24	76-46
REAR DOOR LOWER TRIM PAD	RENEW	76.34.06	76-44
REAR DOOR OUTER HANDLE OPERATING ROD	ADJUST	76.37.11	76-97
REAR DOOR REMOTE CONTROL OPERATING CABLE	RENEW	76.37.68	76-43
REAR DOOR SEAL	RENEW	76.40.02	76-46
REAR DOOR TRIM PAD VENEER PANEL	RENEW	76.47.12	76-45
REAR DOOR UPPER TRIM PAD	RENEW	76.34.05	76-45
REAR DOOR WAIST RAIL MOULDING	RENEW	76.43.05	76-45
REAR FLOOR CARPET	RENEW	76.49.03	76-79
REAR LAMP ASSEMBLY INTERIOR TRIM FINISHER	RENEW	76.19.20	76-90
REAR PARCEL TRAY	RENEW	76.67.06	76-90
REAR QUARTER BUMPER	RENEW	76.22.17	76-48
REAR QUARTER BUMPER BLADE	RENEW	76.25.75	76-50
REAR QUARTER BUMPER LOCATING BRACKET	RENEW	76.22.22	76-50
REAR QUARTER BUMPER MOUNTING RUBBER	RENEW	76.22.21	76-49
REAR QUARTER TRIM PAD	RENEW	76.13.13	76-62
REAR QUARTER UPPER TRIM PAD LEFT HAND	RENEW	76.13.13	76-91
REAR QUARTER UPPER TRIM PAD RIGHT HAND	RENEW	76.13.43	76-91
REAR SEAT ARMREST	RENEW	76.70.39	76-77
REAR SEAT CUSHION	RENEW	76.70.37	76-77
REAR SEAT SQUAB	RENEW	76.70.38	76-78
REAR SHELF FINISHER	RENEW	76.67.06	76-78
REAR SIDE SEAT BELT	RENEW	76.73.18	76-78
SILL TREAD PLATE - FRONT	RENEW	76.76.01	76-55
SILL TREAD PLATE - REAR	RENEW	76.76.02	76-55

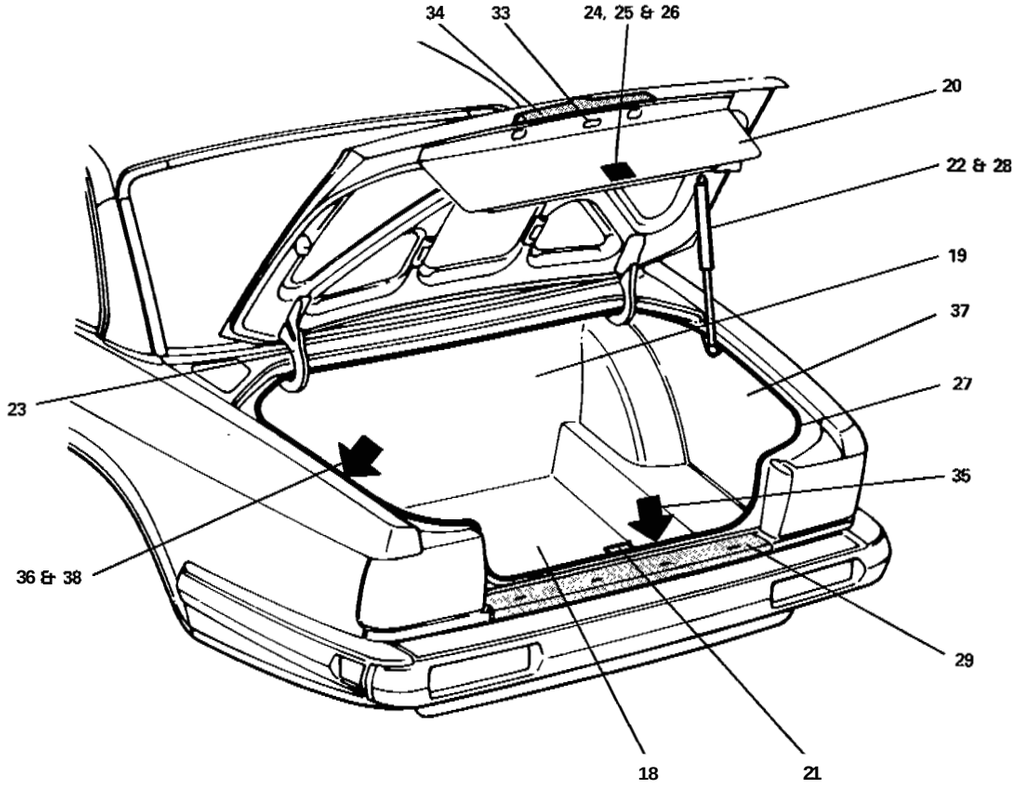
0051G

CONTENTS

DESCRIPTION	OPERATION	OPERATION No	PAGE NO
SLIDING ROOF ASSEMBLY	RENEW	76.82.01	76-55
SLIDING ROOF FLANGE FINISHER	RENEW	76.82.23	76-56
SLIDING ROOF MOTOR DRIVE GEAR	RENEW	76.82.44	76-57
SLIDING ROOF PANEL	RENEW	76.82.05	76-57
SLIDING ROOF PANEL LIFTING BLOCK	RENEW	76.82.27	76-57
SLIDING ROOF PANEL LIFTING BLOCK VEHICLE SET	ADJUST	76.82.38	76-58
SLIDING ROOF PANEL SEAL	RENEW	76.82.15	76-58
SLIDING ROOF PANEL TRIM	RENEW	76.82.19	76-58
SLIDING ROOF PANEL WIND DEFLECTOR	ADJUST	76.82.39	76-59
SLIDING ROOF RACK	RENEW	76.82.42	76-59
SLIDING ROOF RACK VEHICLE SET	RENEW	76.82.43	76-60
SLIDING ROOF WIND DEFLECTOR	RENEW	76.82.07	76-61
STEERING COLUMN LOWER COWL	RENEW	76.46.03	76-92
STEERING COLUMN UPPER COWL	RENEW	76.46.02	76-91
WEATHER STRIP	RENEW	76.43.22	76-61
WEATHER STRIP CHANNEL	RENEW	76.43.25	76-62
WINDSCREEN GLASS - LOWER FINISHER	RENEW	76.43.41	76-62

0051G


12 & 13
8, 9, 10 & 11
7 & 14
1
32
3
42
4, 5 & 6
2
39
30 & 31
15 & 17
16
43, 44 & 45
46 & 47
41
2
40

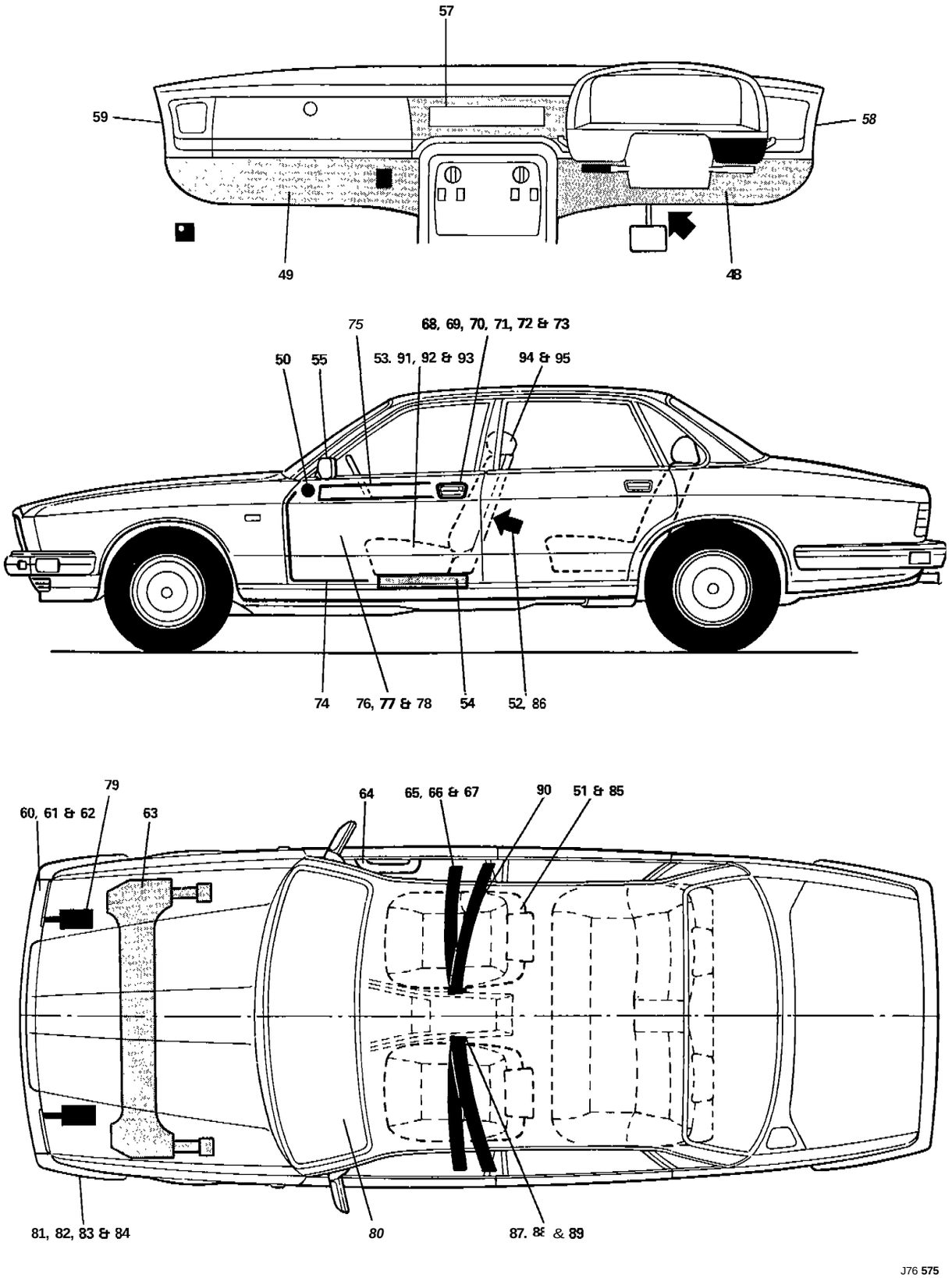

34
33
24, 25 & 26
20
22 & 28
19
37
27
23
35
36 & 38
29
18
21

J76 574

ILLUSTRATED INDEX – KEY

ITEM No	DESCRIPTION	OPERATION No	PAGE No	VOLUME
1	A POST LOWER TRIM PAD	76.13.30	76-79	4
2	ASHTRAY	76.67.13	76-93	4
3	AUTOMATIC GEARBOX SELECTOR TRIM FINISHER	76.25.07	76-93	4
4	B-C POST CAPPING	76.43.34	76-80	4
5	B POST LOWER TRIM PAD	76.13.29	76-80	4
6	B POST UPPER TRIM PAD	76.13.28	76-80	4
7	BONNET	76.16.01	76-24	4
8	BONNET HINGE (FEDERAL)	76.16.11	76-29	4
9	BONNET HINGE (NON FEDERAL)	76.16.11	76-28	4
10	BONNET HINGE VEHICLE SET (FEDERAL)	76.16.12	76-30	4
11	BONNET HINGE VEHICLE SET (NON FEDERAL)	76.16.12	76-28	4
12	BONNET GAS STRUT	76.16.15	76-26	4
13	BONNET GAS STRUT – VEHICLE SET	76.16.16	76-26	4
14	BONNET INSULATION PAD	76.16.06	76-14	4
15	BONNET LOCK	76.00.00	76-25	4
16	BONNET SEALING RUBBER – REAR	76.16.04	76-25	4
17	BONNET STRIKER ASSEMBLY	76.16.24	76-25	4
18	BOOT FLOOR CARPET	76.19.30	76-68	4
19	BOOT FRONT LINER	76.19.31	76-68	4
20	BOOT LID	76.19.01	76-63	4
21	BOOT LID ADJUST ON STRIKER	76.19.04	76-62	4
22	BOOT LID GAS STRUT	76.19.27	76-64	4
23	BOOT LID HINGE – VEHICLE SET	76.19.28	76-67	4
24	BOOT LID LOCK BARREL	76.19.19	76-66	4
25	BOOT LID LOCK MECHANISM	76.19.25	76-64	4
26	BOOT LID LOCK STRIKER	76.19.12	76-66	4
27	BOOT LID SEAL	76.19.06	76-63	4
28	BOOT LID STRUT PIVOT BOLTS	76.00.00	76-64	4
29	BOOT LID SEAL TREAD PLATE	76.19.09	76-67	4
30	BONNET LOCK CONTROL CABLE	76.16.29	76-26	4
31	BONNET LOCK CONTROL CABLE ASSEMBLY – VEHICLE SET	76.16.35	76-27	4
32	BONNET LOCK RELEASE HANDLE	76.16.30	76-27	4
33	BOOT LOCK RELEASE TRIGGER HANDLE	76.19.15	76-65	4
34	BOOT LOCK FINISHER	76.43.31	76-65	4
35	BOOT REAR LINER	76.19.22	76-67	4
36	BOOT SIDE LINER – LEFT HAND	76.19.22	76-68	4
37	BOOT SIDE LINER – RIGHT HAND	76.19.23	76-69	4
38	BOOT VENTILATOR OUTLET	76.15.66	76-66	4
39	BUMPER FRONT-ASSEMBLY	76.22.08	76-15	4
39	BUMPER FRONT-ASSEMBLY	76.22.09	76-15	4
40	BUMPER REAR-ASSEMBLY	76.22.15	76-47	4
40	BUMPER REAR-ASSEMBLY	76.22.18	76-47	4
41	CANTRAIL CRASH ROLL	76.13.10	76-81	4
42	CONSOLE ASHTRAY	76.67.18	76-81	4
43	CONSOLE ASSEMBLY	76.25.01	76-81	4
44	CONSOLE FINISHER – AUTOMATIC	76.25.19	76-82	4
45	CONSOLE FINISHER – MANUAL	76.25.19	76-83	4
46	CONSOLE GLOVEBOX	76.25.16	76-82	4
47	CONSOLE GLOVEBOX LID	76.25.18	76-82	4

0032K

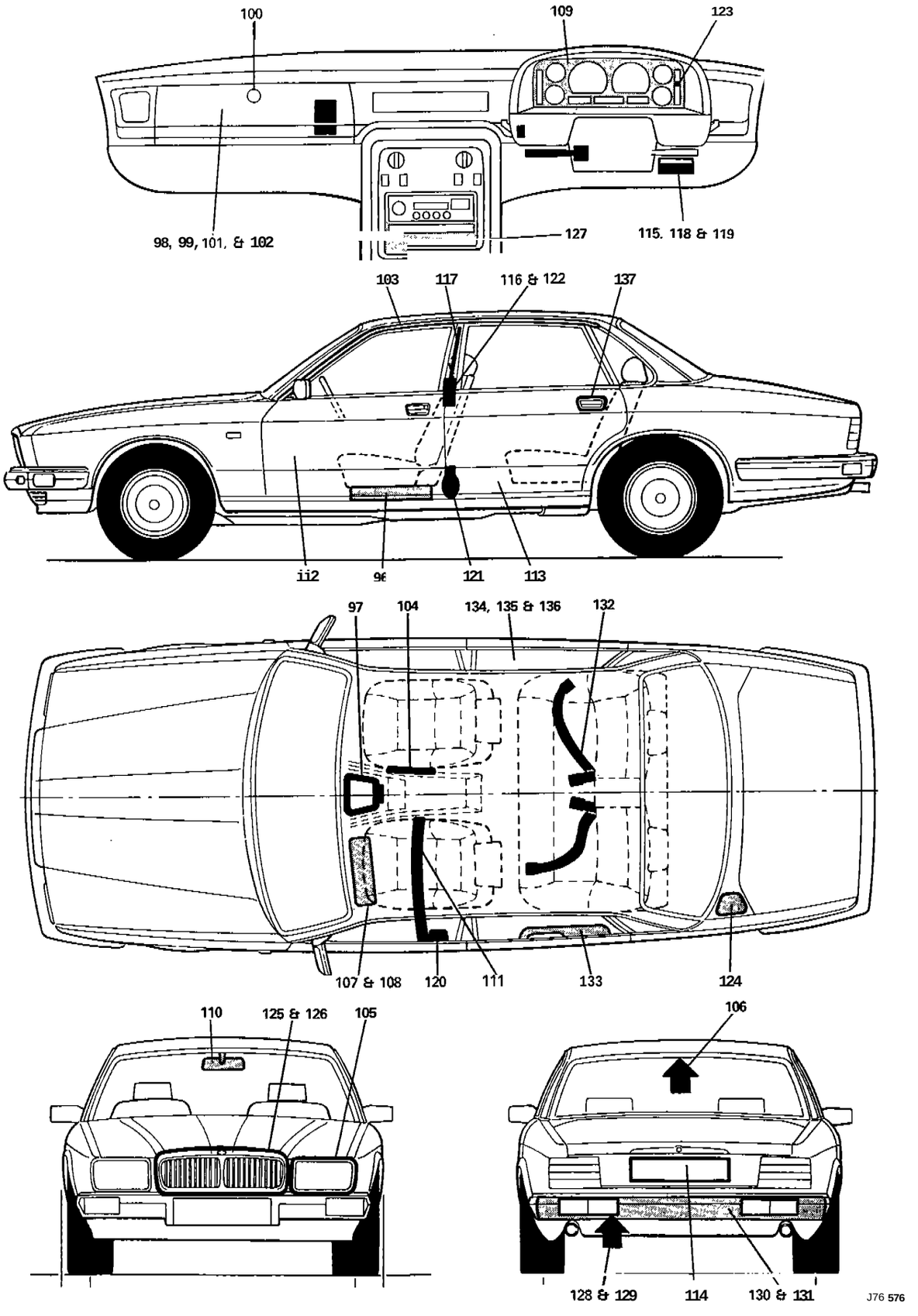

57
59
58
49
48
75
68, 69, 70, 71, 72 & 73
50
55
53. 91, 92 & 93
94 & 95
74
76, 77 & 78
54
52, 86
79
60, 61 & 62
63
64
65, 66 & 67
90
51 & 85
81, 82, 83 & 84
80
87. 88 & 89

J76 575

ILLUSTRATED INDEX – KEY

ITEM No	DESCRIPTION	OPERATION No	PAGE No	VOLUME
48	DASH LINER DRIVERS SIDE	76.46.11	76-83	**4**
49	DASH LINER PASSENGERS SIDE	76.46.15	76-83	4
50	DOOR AIR VENT GROMMET	76.00.00	76-83	4
51	ELECTRICALLY OPERATED FRONT SEAT	76.70.10	76-70	4
52	ELECTRICALLY **OPERATED** FRONT SEAT BACK FINISHER	76.70.09	76-71	4
53	ELECTRICALLY OPERATED FRONT SEAT CUSHION	76.70.11	76-69	4
54	ELECTRICALLY OPERATED FRONT SEAT – RUNNER AND MOTOR	76.70.08	76-70	4
55	EXTERIOR MIRROR	76.10.52	76-52	4
56	FASCIA BOARD	76.46.01	76-84	**4**
57	FASCIA CENTRE VENEER PANEL	76.47.06	76-86	**4**
58	FASCIA CLOSING PANEL – DRIVERS SIDE	76.46.28	76-86	4
59	FASCIA CLOSING PANEL – PASSENGERS SIDE	76.46.27	76-86	4
60	FRONT BUMPER CENTRE BLADE	76.22.37	76-16	4
61	FRONT BEAM	76.22.26	76-95	**4**
62	FRONT BEAM COVER	76.22.28	76-94	4
63	FRONT CROSSMEMBER	76.10.05	76-18	4
64	FRONT DOOR ARMREST	76.34.22	76-30	4
65	FRONT DOOR GLASS	76.31.01	76-31	4
66	FRONT DOOR GLASS CHANNEL RUBBER	76.31.13	76-32	4
67	FRONT DOOR GLASS FRAME	76.31.51	76-33	4
68	FRONT DOOR HANDLE	76.58.01	76-33	4
69	FRONT DOOR INSIDE HANDLE	76.58.20	76-34	4
70	FRONT DOOR LOCK	76.37.12	76-35	4
71	FRONT DOOR LOCK STRIKER	76.37.23	76-37	**4**
72	FRONT DOOR OUTER HANDLE OPERATING ROD	76.37.10	76-98	**4**
73	FRONT DOOR REMOTE CONTROL OPERATING CABLE	76.37.67	76-26	4
74	FRONT DOOR SEAL	76.40.01	76-38	4
75	FRONT DOOR TRIM PAD VENEER PANEL	76.47.11	76-36	4
76	FRONT DOOR UPPER TRIM PAD	76.34.02	76-38	4
77	FRONT DOOR LOWER TRIM PAD	76.34.03	76-36	4
78	FRONT DOOR WAIST RAIL MOULDING	76.43.04	76-37	4
79	FRONT ENERGY ABSORBING STRUT	76.22.31	76-17	4
80	FRONT FLOOR CARPET	76.49.02	76-72	**4**
81	FRONT QUARTER BUMPER	76.22.16	76-21	4
82	FRONT QUARTER BUMPER BLADE	76.22.73	76-23	**4**
83	FRONT QUARTER BUMPER LOCATING BRACKET	76.22.20	76-22	4
84	FRONT QUARTER BUMPER MOUNTING RUBBER	76.22.19	76-22	4
85	FRONT SEAT	76.70.01	76-72	4
86	FRONT SEAT BACK FINISHER	76.70.03	76-72	4
87	FRONT SEAT BELT ADJUSTER	76.73.12	76-76	4
88	FRONT SEAT BELT BUCKLE UNIT	76.73.02	76-73	4
89	FRONT SEAT BELT LEFT HAND	76.73.10	76-73,	4
90	FRONT SEAT BELT RIGHT HAND	76.73.21	76-74	4
91	FRONT SEAT CUSHION	76.70.02	76-74	4
92	FRONT SEAT – CUSHION COVER	76.70.02	76-74	4
93	FRONT SEAT CUSHION SUPPORT CENTRE	76.70.19	76-75	4
94	FRONT SEAT HEADREST	76.70.30	76-75	4
95	FRONT SEAT HEAD REST – ELECTRICALLY OPERATED SEAT	76.70.14	76-71	4

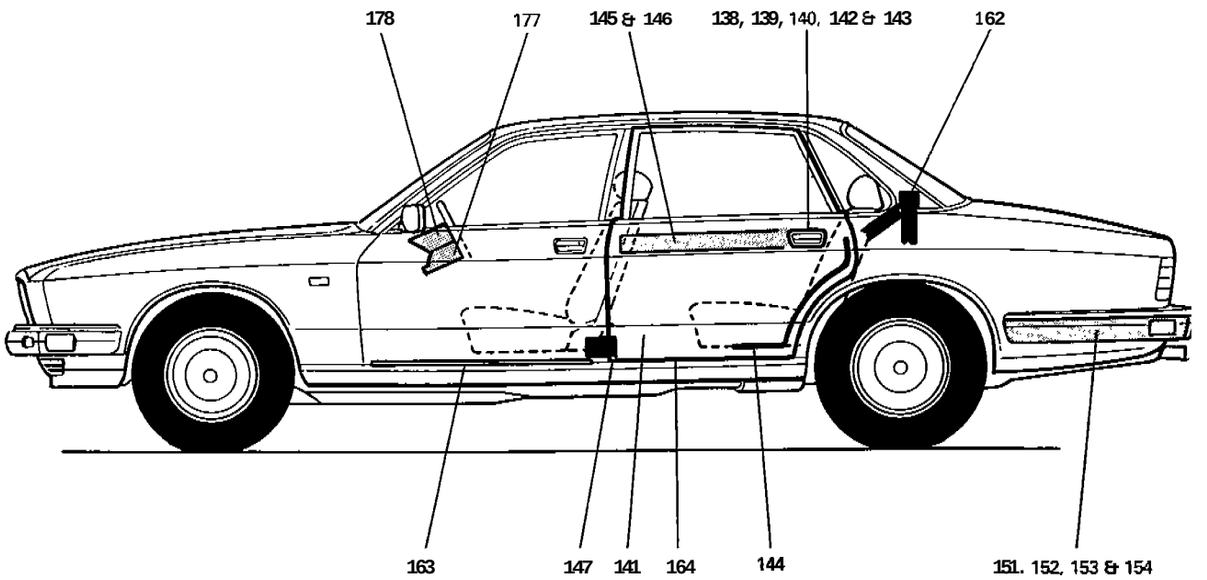
0032K

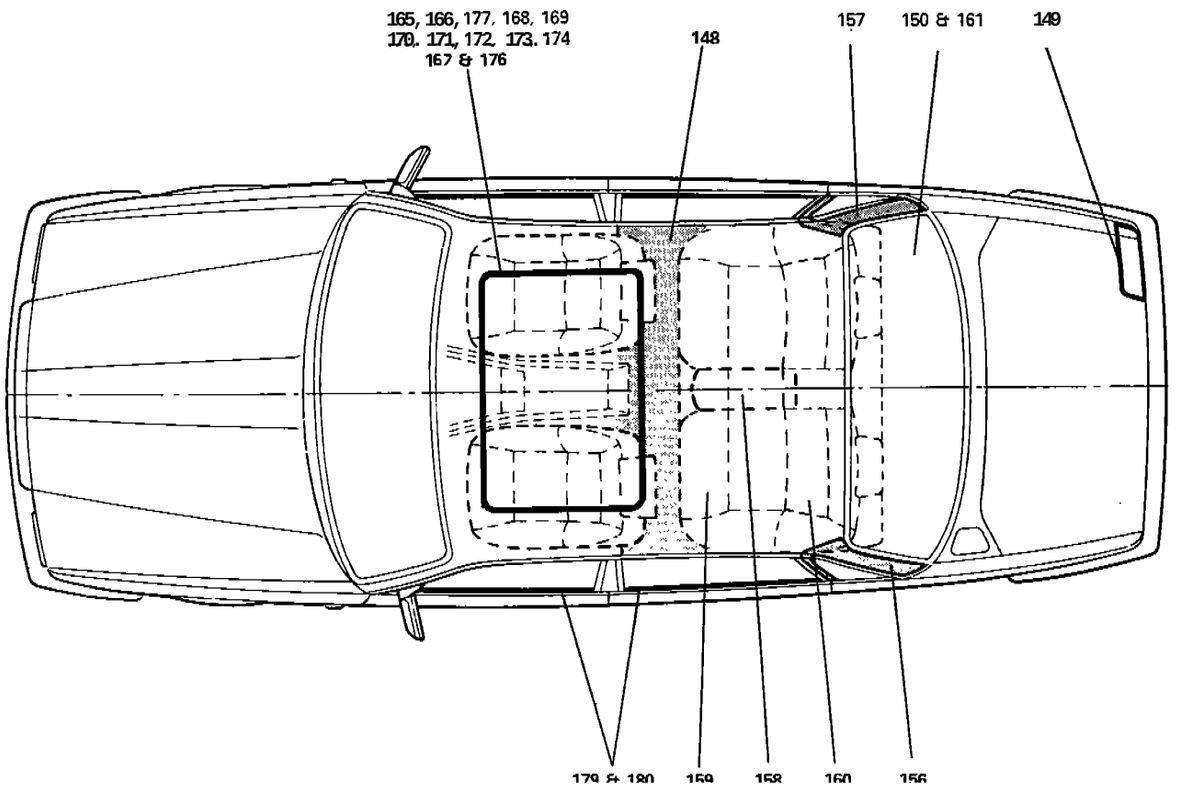

100
109
123
98, 99, 101, & 102
127
115, 118 & 119
103
117
116 & 122
137
112
96
121
113
97
104
134, 135 & 136
132
107 & 108
120
111
133
124
110
125 & 126
105
106
128 & 129
114
130 & 131
J76 576

ILLUSTRATED INDEX – KEY

ITEM No	DESCRIPTION	OPERATION No	PAGE No	VOLUME
96	FRONT SEAT RUNNERS AND ADJUSTER ASSEMBLY	76.70.24	76-76	**4**
97	GEARBOX SPORT **MODE** SWITCH FINISHER	76.25.09	76-97	4
98	GLOVE BOX	76.52.03	76-87	4
99	GLOVEBOX LID	76.52.02	76-87	4
100	GLOVEBOX LID LOCK	76.52.08	76-88	4
101	GLOVEBOX LID VENEER PANEL	76.47.21	76-88	4
102	GLOVEBOX MIRROR ASSEMBLY	76.52.05	76-89	4
103	GUTTER FINISHER	76.43.11	76-53	**4**
104	HANDBRAKE LEVER TRIM	76.13.63	76-89	4
105	HEADLAMP TRIM FINISHER	76.40.01	76-24	4
106	HEADLINING REAR FINISHER	76.64.12	76-89	**4**
107	ILLUMINATED SUNVISOR ASSEMBLY	76.10.48	76-93	4
108	ILLUMINATED SUNVISOR MIRROR ASSEMBLY	76.10.50	76-93	**4**
–	INDEX – ILLUSTRATED	76.00.00	76-02/8	4
–	INDEX – KEY	76.00.00	76-03/9	4
109	INSTRUMENT PANEL VENEER PANEL	76.47.24	76-99	4
110	INTERIOR MIRROR	76.10.51	76-90	4
111	LAP BELT INERTIA REEL	76.73.22	76-115	4
112	LOWER DOOR TRIM FRONT	76.34.03	76-53	4
113	LOWER DOOR TRIM REAR	76.34.06	76-53	4
114	NUMBER PLATE TRIM	76.43.22	76-53	4
115	PASSIVE ECU	76.73.00	76-111	4
116	PASSIVE RESTRAINT	76.73.00	76-102	4
116	PASSIVE RESTRAINT	76.73.00	76-112	4
116	PASSIVE RESTRAINT	76.73.00	76-109	**4**
117	PASSIVE RESTRAINT GUIDE RAIL	76.73.33	76-114	**4**
118	PASSIVE RESTRAINT ECU	76.73.00	76-106	**4**
119	PASSIVE RESTRAINT ECU	76.73.00	76-107	4
120	PASSIVE RESTRAINT INERTIA REEL	76.73.23	76-114	4
121	PASSIVE RESTRAINT MOTOR/DRIVE AND INERTIA REEL ASSEMBLIES	76.73.27	76-113	4
122	PASSIVE RESTRAINT SYSTEM (USA ONLY)	76.73.00	76-100	4
123	PASSIVE RESTRAINT WARNING CIRCUIT	76.73.00	76-110	**4**
124	PETROL FILLER FLAP	76.10.25	76-53	4
125	RADIATOR GRILLE SURROUND	76.55.15	76-54	4
126	RADIATOR GRILLE – VEHICLE SET	76.55.07	76-54	4
127	RADIO CONSOLE	76.25.15	76-93	4
128	REAR BEAM	76.22.27	76-96	4
129	REAR BEAM COVER	76.22.29	76-94	4
130	REAR BUMPER CENTRE BLADE	76.22.12	76-51	**4**
131	REAR BUMPER CENTRE BLADE TRIM FINISHER	76.22.14	76-52	**4**
132	REAR CENTRE SEAT BELT STATIC	76.73.31	76-76	**4**
133	REAR DOOR ARMREST	76.34.23	76-39	**4**
134	REAR DOOR GLASS	76.31.02	76-38	4
135	REAR DOOR GLASS CHANNEL RUBBER	76.31.14	76-40	4
136	REAR **DOOR** GLASS FRAME	76.31.61	76-41	**4**
137	REAR DOOR HANDLE	76.58.02	76-41	4

0032K


178
177
145 & 146
138, 139, 140, 142 & 143
162
163
147
141
164
144
151. 152, 153 & 154


165, 166, 177, 168, 169
170. 171, 172, 173. 174
167 & 176
148
157
150 & 161
149
179 & 180
159
158
160
156

J76 577

ILLUSTRATED INDEX– KEY

ITEM No	DESCRIPTION	OPERATION No	PAGE No	VOLUME
138	REAR DOOR INSIDE HANDLE	76.58.19	76-42	4
139	REAR DOOR LOCK	76.37.13	76-43	4
140	REAR DOOR LOCK STRIKER	76.37.24	76-46	4
141	REAR DOOR LOWER TRIM PAD	76.34.06	76-44	4
142	REAR DOOR OUTER HANDLE OPERATING ROD	76.37.11	76-97	4
143	REAR DOOR REMOTE CONTROL OPERATING CABLE	76.37.68	76-43	4
144	REAR DOOR SEAL	76.40.02	76-46	4
145	REAR DOOR TRIM PAD VENEER PANEL	76.47.12	76-45	4
146	REAR DOOR UPPER TRIM PAD	76.34.05	76-45	4
147	REAR DOOR WAIST RAIL MOULDING	76.43.05	76-45	4
148	REAR FLOOR CARPET	76.49.03	76-79	4
149	REAR LAMP ASSEMBLY INTERIOR TRIM FINISHER	76.19.20	76-90	4
150	REAR PARCEL TRAY	76.67.06	76-90	4
151	REAR QUARTER BUMPER	76.22.17	76-48	4
152	REAR QUARTER BUMPER BLADE	76.25.75	76-50	4
153	REAR QUARTER BUMPER LOCATING BRACKET	76.22.22	76-50	4
154	REAR QUARTER BUMPER MOUNTING RUBBER	76.22.21	76-49	4
156	REAR QUARTER UPPER TRIM PAD LEFT HAND	76.13.13	76-91	4
157	REAR QUARTER UPPER TRIM PAD RIGHT HAND	76.13.43	76-91	4
158	REAR SEAT ASSEMBLY	76.70.39	76-77	4
159	REAR SEAT CUSHION	76.70.37	76-77	4
160	REAR SEAT SQUAB	76.70.38	76-78	4
161	REAR SHELF FINISHER	76.67.06	76-78	4
162	REAR SIDE SEAT BELT	76.73.18	76-78	4
163	SILL TREAD PLATE – FRONT	76.76.01	76-55	4
164	SILL TREAD PLATE – REAR	76.76.02	76-55	4
165	SLIDING ROOF ASSEMBLY	76.82.01	76-55	4
166	SLIDING ROOF FLANGE FINISHER	76.82.23	76-56	4
167	SLIDING ROOF MOTOR DRIVE GEAR	76.82.44	76-57	4
168	SLIDING ROOF PANEL	76.82.05	76-57	4
169	SLIDING ROOF PANEL LIFTING BLOCK	76.82.27	76-57	4
170	SLIDING ROOF PANEL LIFTING BLOCK VEHICLE SET	76.82.38	76-58	4
171	SLIDING ROOF PANEL SEAL	76.82.15	76-58	4
172	SLIDING ROOF PANEL TRIM	76.82.19	76-58	4
173	SLIDING ROOF PANEL WIND DEFLECTOR	76.82.39	76-59	4
174	SLIDING ROOF RACK	76.82.42	76-59	4
175	SLIDING ROOF RACK–VEHICLE SET	76.82.43	76-60	4
176	SLIDING ROOF WIND DEFLECTOR	76.82.07	76-61	4
177	STEERING COLUMN LOWER COWL	76.46.03	76-92	4
178	STEERING COLUMN UPPER COWL	76.46.02	76-91	4
179	WEATHER STRIP	76.43.22	76-61	4
180	WEATHER STRIP CHANNEL	76.43.25	76-62	4

0032K

RESERVED FOR DIMENSIONS OF VEHICLE
4.0& 2.9

FRONT BUMPER

RENEW 76.22.08

Remove the side marker lamps and the front side **lamp** assemblies.
Remove the two bumper securing bolts, pull the bumper forward, disconnect the horn feed wires and remove the screw securing the horn earth to the front bumper.
Remove the bumper assembly **(1** Fig **1).**
Lift the replacement bumper assembly into position.
Reconnect the horn feed and earth wires.
Align, fit arid tighten the two securing bolts, ensuring that the two quarter bumpers are engaged in the wing side fixings.
Refit the side marker lamps and front side lamp assemblies.

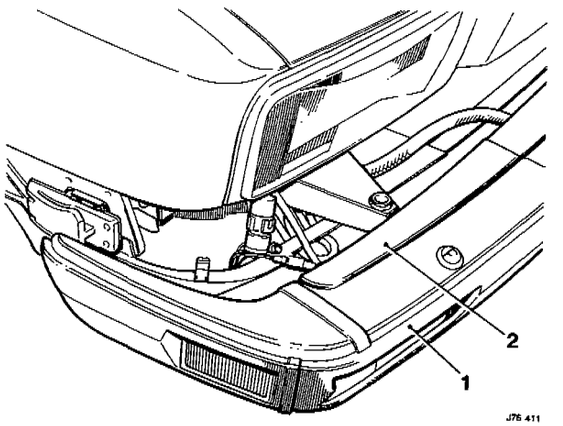


Fig **1**

DATA

TORQUE FIGURES

Bumper mounting brackets to body (Non Federal) 23-27Nm
Bumper mounting struts to body (Federal) 23-27Nm
Bumper to bumper bracket (Non Federal) 40-50Nm
Bumper to bumper strut (Federal) 40-50Nm
Guide block to mounting bracket 3.5-4.75Nm
Horns to bracket 22-28Nm
Mounting bracket guide block to body 7.5-10Nm

SPANNER SIZES

8mm
10mm
13mm
19mm
No 20 Torx

0384b

FRONT BUMPER ASSEMBLY

OVERHAUL 76.22.09

Remove the front side and marker lamp assemblies and remove the two bumper securing bolts.
Pull the bumper assembly forward and disconnect the horn **feed** and earth **wires.**
Remove the bumper assembly complete from the vehicle.
Remove the centre **blade** trim finisher **(1** Fig 2), remove the centre blade to bumper securing screws (2 Fig 2) and remove the blade (3 Fig 2).

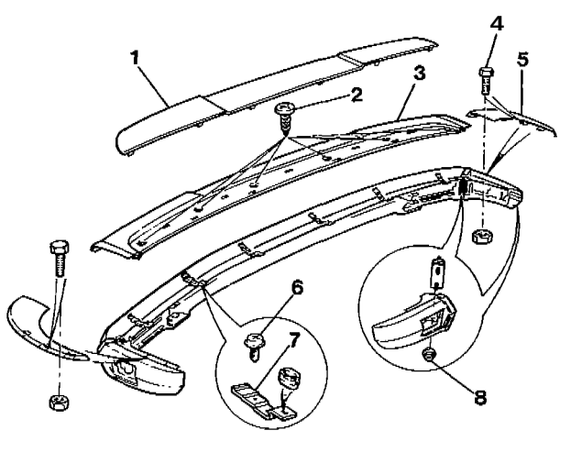


Fig 2

Remove both quarter bumper securing bolts (4 Fig 2 page 15) and remove the quarter bumper blades (5 Fig 2 page 15).
Remove the rubber bumper upper cover securing screws (3 Fig 2 page 15).
Remove the centre blade bracket/cover retaining clip securing screws (4 **Fig** 2 page 15) and remove the bracket (5 fig 2 page 15).
Remove the nuts securing the quarter bumper to the rubbers.
Remove the cover to bumper lower securing screws and remove the cover, remove the horn bracket securing screw and remove the bracket from the bumper beam.
Replace any damaged component and reverse the removal procedure to reassemble and fit to the vehicle.

DATA

TORQUE FIGURES

Bumper mounting brackets to body (Non Federal) ***23-27Nm***
Bumper mounting struts to body (Federal) ***23-27Nm***
Bumper front ***blade*** *to beam* ***5-7Nm***
Bumper side blade ***to*** *beam* ***5-7Nm***
Bumper side to mounting block ***5-7Nm***
Bumper to bumper bracket (Non Federal) ***40-50Nm***
Bumper to bumper strut (Federal) ***40-50Nm***
Flexible mounting block to beam ***5-7Nm***
Guide block ***to*** *mounting bracket* ***3.5-4.75Nm***
Horns to bracket ***22-28Nm***
Mounting bracket guide block to body ***7.5-10Nm***

SPANNER SIZES

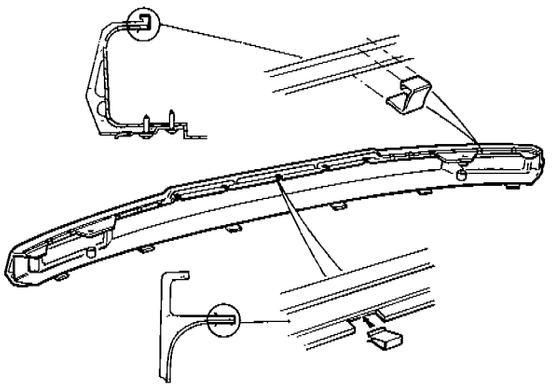
8mm
10mm
13mm
19mm
No *20 Torx*

0392b

FRONT BUMPER CENTRE BLADE

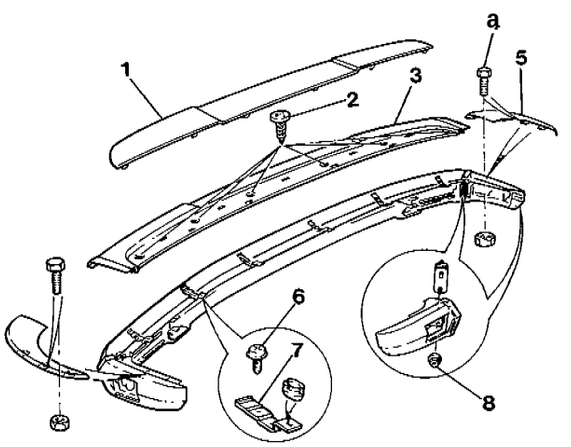
RENEW **76.22.37**

Remove the trim finisher from its locating **lugs.**
Remove the centre section securing screws (2 Fig 2), manoeuvre the blade (1 Fig 2) clear of its locating clips and remove the centre section (3 Fig 2).
Fit the replacement blade to the retaining clips and align the fixing holes, fit and tighten the securing screws and refit the finisher to the centre blade.



J76 378

Fig **1**



J76 376

Fig 2

DATA

TORQUE FIGURES

Bumper mounting brackets to body (Non Federal) **23-27Nm**
Bumper mounting struts to body (Federal) **23-27Nm**
Bumper to bumper bracket (Non Federal) **40-50Nm**
Bumper to bumper strut (Federal) **40-50Nm**
Guide block to mounting bracket **3.5-4.75Nm**
Horns to bracket **22-28Nm**
Mounting bracket guide block to body **7.5-10Nm**

SPANNER SIZES

8mm
I Omm
13mm
19mm
No 20 Torx

0386b

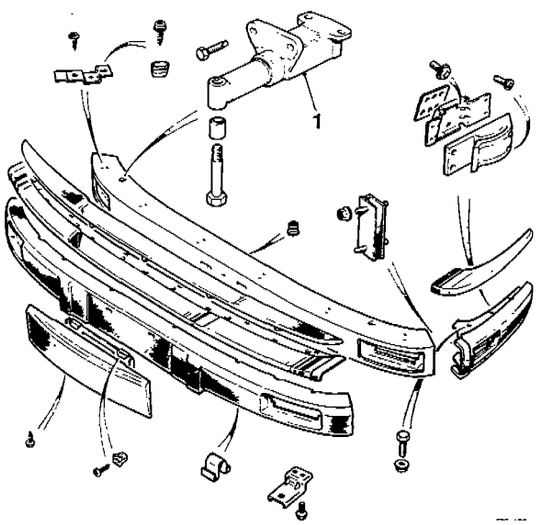


Fig 1

FRONT ENERGY ABSORBING STRUT

RENEW **76.22.31**

Remove the side marker lamps and the front side lamp assemblies.
Remove the two bumper securing bolts, pull the bumper forward, disconnect the horn feed wires and remove the screw securing the horn earth to the front bumper.
Remove the bumper assembly.
Cut the ratchet strap securing the block connector to the strut mounting bracket.
Remove the bolt securing the strut (1 Fig 1), and remove the strut assembly.
Secure the strut in a vice.
Remove the locknut securing the bracket to the strut.
Note the number of threads protruding from the bracket and remove the strut.
Reverse the removal procedure to refit the replacement strut to the vehicle.
Lift the replacement bumper assembly into position and connect up the horn feed and earth wires.
Align, fit and tighten the two securing bolts, ensuring that the two quarter bumpers are engaged in the wing side fixings.
Refit the side marker lamps and front side lamp assemblies.

DATA

TORQUE FIGURES

Bumper mounting brackets to body **(Non** *Federal)* **23-27Nm**
Bumper mounting struts to body (Federal) **23-27Nm**
Bumper to bumper bracket (Non Federal) **40-50Nm**
Bumper to bumper strut (Federal) **40-50Nm**
Guide block to mounting bracket **3.5-4.75Nm**
Horns to bracket **22-28Nm**
Mounting bracket guide block to body **7.5-10Nm**

DATA

SPANNER SIZES

8mm
10mm
13mm
19mm
No 20 Torx

1669B/77

FRONT CROSSMEMBER

RENEW *76.10.05*

Jack up the front of the vehicle.
Fit camber tie-down bars (Service Tool JD 133) to the road spring pans.
NOTE: If, for any reason, the front crossmember is being stripped down, Service Tool JD 115 must be used in place of JD 133, and the coil springs must be removed prior to crossmember removal (operation 60.20.01). **JD** 133 is for operations where the crossmember is being removed for access only.
Lower the vehicle and settle the suspension.
Open the bonnet.
Engage the camber tie-down bars in the suspension turrets.
Remove the front shock absorber upper securing nuts, washers and buffers (Fig 1).
Slacken off the road wheel nuts 1/4 of a turn each.
Jack **up** the front of the vehicle. Support with axle stands.
Mark the wheel to stud relationship, and remove the front road wheels.
Disconnect the left hand brake pad wear sensor block connector.
Remove the lower guide pin bolt from the left hand caliper, and pivot the caliper upwards to gain access to the brake pads (Fig 2).
NOTE: Use an open-ended spanner to hold the guide pin during removal. This will prevent damage to the rubber dust cover,
Remove the brake pads.
Remove the upper guide pin bolt, remove the caliper, and re-position the caliper away from the suspension area.
Disconnect the right hand brake pad wear sensor **block** connector.
Remove the right hand brake pads and caliper.
Turn the steering to the straight ahead position. Remove the ignition key.
Remove the lower column (3 Fig 3) to steering rack securing bolt/nut (1,2, Fig **3).**

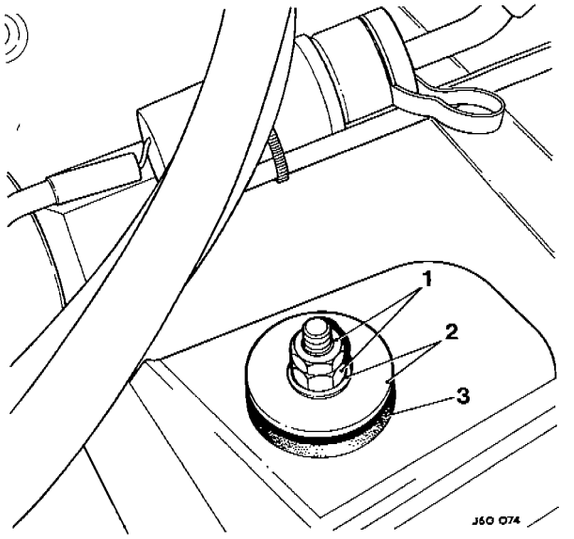


fig 1

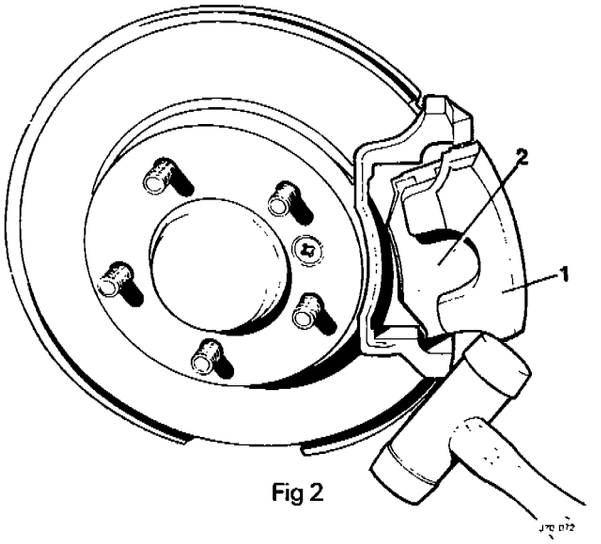


Fig 2

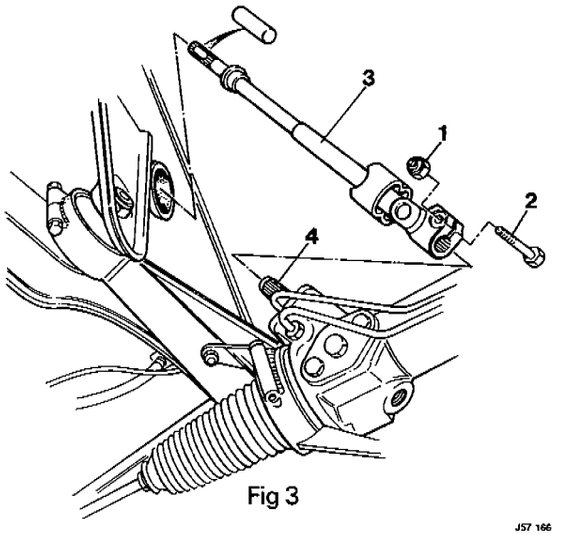


Fig 3

J57 166

Disengage the splines from the rack pinion (4 Fig 3 page 18).
NOTE: At this point, the lower column cannot be completely disconnected from the pinion.
Remove the P.A.S. pipe to crossmember retaining clamps and spacing washers.
Position a drain tray under the front of the vehicle.
Disconnect the steering rack return pipe, and drain the system.
Fit blanking plugs to the pipe and rack.
Disconnect the steering rack feed pipe, and drain the system.
Fit blanking plugs to the pipe and **rack.**
Re-position the pipes away from the suspension area.
Remove the drain tray.
Remove the engine mounting securing nuts.

Attach JD 124 rear engine lifting eye, fit and align Service Tool MS 53B engine support bracket (Fig 1). Engage the hook to the lifting eye (2.9 ENGINE **ONLY).**

Disconnect Nos. 1 and 2 plug leads.
Attach 18G 1465 rear engine lifting eye, fit and align Service Tool MS 536 engine support bracket (Fig 2). Engage the hook to the lifting eye (3.6 ENGINE **ONLY).**

Tighten the hook nut to take the weight of the engine.
Slacken off the crossmember rear mounting bolts/nuts.
Remove the nuts. Do not remove the bolts at this stage.
Slacken off the mounting clamp plate securing bolts (Fig 3).
Take the weight of the crossmember assembly on the jack.
Finally, remove the rear mounting bolts and spacers.
Remove the crossmember front mounting to chassis securing nuts (Fig 4).
NOTE: The bolts nuts remain captive.
Carefully lower the assembly from the vehicle. Ensure that the calipers, pipes and lower column do not foul during removal.
Change over all ancilliary components to the new crossmember.
Position the crossmember assembly on the jack under the vehicle,
Raise the assembly into position and align the shock absorbers.
Align the engine mountings, P.A.S. pipes, lower column **and** rear mountings.
Align the front crossmember mounting securing bolt holes.
Fit and tighten the front mounting securing bolts (Fig 4).
Using a second jack, align the left hand rear mounting (Fig 3).

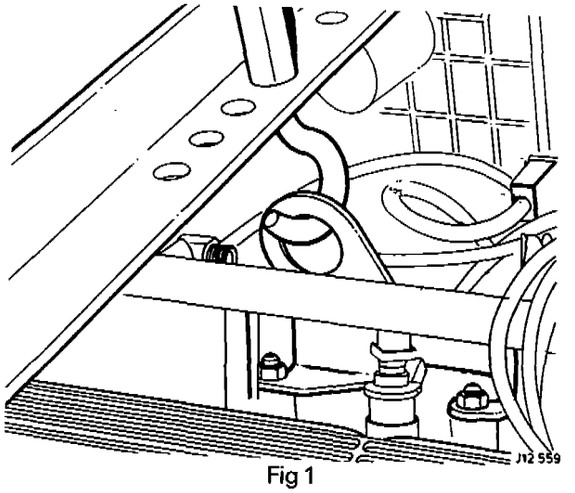


Fig 1

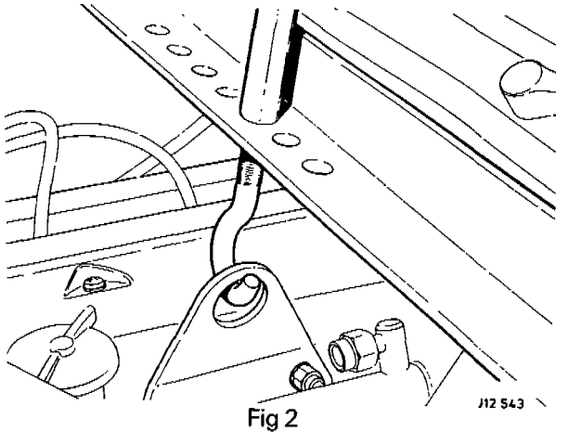


Fig 2

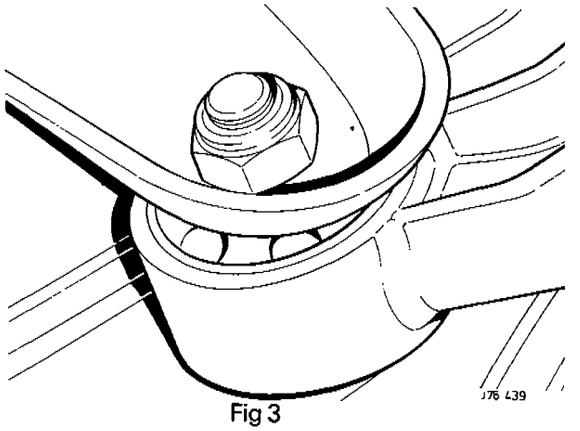


Fig 3

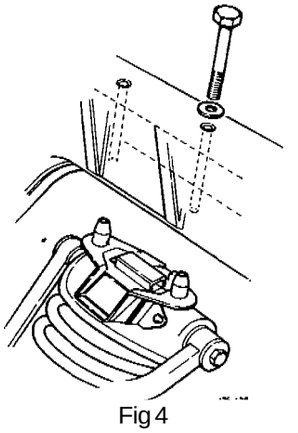


Fig 4

Fit and align the outer spacer.
Fit the bolt through the chassis, the outer spacer and the mounting.
Fit the inner spacer.
Push the bolt fully home, fit but do not tighten the nut.
Lower and remove the jack from under the mounting.
Repeat the above procedure for the right hand rear mounting.
Lower and remove the jack from under the crossmember.
Finally tighten the rear mounting securing bolts/nuts.
Tighten the rear mounting clamp plate securing bolts.
Ensure the steering wheel and rack are in the straight ahead position.
Re-position the lower column on to the pinion and align the clamp slot.
Fit and tighten the clamp bolt/nut.
Remove the blanking plugs from the **P.A.S.** pipes and rack.
Fit new **'O'** rings to the pipes. Connect the pipes to the rack. Tighten the union nuts.
Refit the **P.A.S.** pipe clamps.
Slacken off the MS 536 hook nut. Remove the hook. Remove Service **Tool MS 53B.**
Remove the lifting eye.
Fit and tighten the engine mounting securing nuts.
Refit the calipers. Refit the brake pads.
Refit the road wheels.
Lower the vehicle from the axle stands -Settle the suspension.
Refit the shock absorber upper buffers, washers, and securing nuts.
Release the tie-down bars from the suspension.
Raise the vehicle. Remove the tie-down bars from the road spring pans. Lower the vehicle.
Bleed the **P.A.S.** system as follows:
Top up the **P.A.S.** reservoir.
Start the engine.
Turn the steering wheel **to** full left hand lock.
Turn the steering wheel to full right hand lock.
Top up the reservoir. Fit the reservoir cap.
Close the bonnet.

DATA

SERVICE TOOLS

JD 133 Tie-down bars
JD 124 Rear lifting eye (2.9 ENGINE)
18G 1465 Rear lifting eye (3.6 ENGINE)
MS 53B Engine support bracket

TORQUE FIGURES

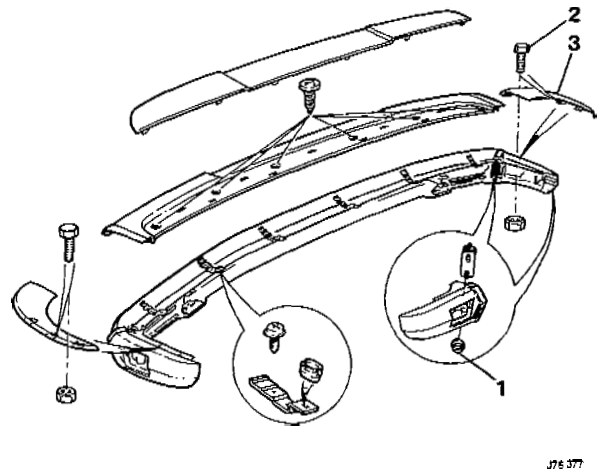
Caliper to carrier 31-40Nm
Wheel nut to wheel stud (steel wheel) 65-85 ''
Wheel nut to wheel stud (alloy wheel) 88-102Nm
Shock absorber to upper mounting 35-43Nm
P.A.S. feed pipe to rack 19-23Nm
P.A.S. return pipe to rack 19-23Nm

SPANNER SIZES

13mm
14mm
16mm
17mm
19mm
22mm
15/16A F

OILS/GREASES/SEALANTS

P.A.S. reservoir DEXRON 2D or Type G (M2C 33G)



J76 377

Fig *1*

0051G

FRONT QUARTER BUMPER

RENEW 76.22.16

Remove the front beam 76.22.26.
Remove the quarter bumper assembly to mounting rubber securing nuts (1 Fig 1).
Remove the quarter bumper assembly.
Remove the reflector, remove the quarter bumper blade securing nuts and bolts (2 Fig 1) and remove the quarter bumper blade (3 Fig 1).
Reverse the removal procedure to refit the replacement bumper.

DATA

TORQUE FIGURES

Bumper quarter blade to quarter bumper 5-7Nm
Bumper side to flexible mounting block 5-7Nm

SPANNER SIZES

8mm
10mm

1669B

FRONT QUARTER BUMPER MOUNTING RUBBER

RENEW **76.22.19**

Remove the front beam 76.22.26.
Remove the front quarter bumper 76.22.16
Remove the nuts (1 Fig 1) securing the beam to the flexible mounting rubber and remove the mounting from the beam.
Reverse the removal procedure to fit the replacement rubber.

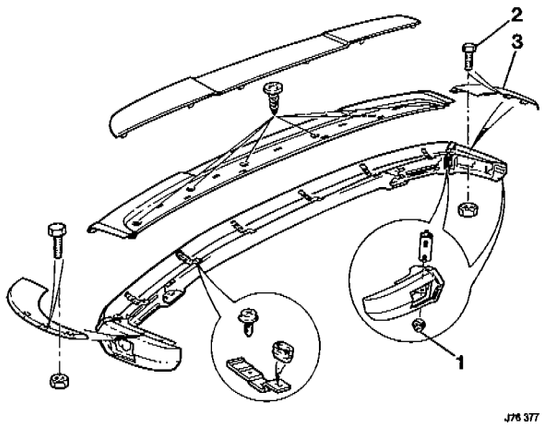


Fig 1

DATA

TORQUE FIGURES

Bumper mounting brackets to body (Non Federal) ***23-27Nm***
Bumper mounting struts to body (Federal) ***23-27Nm***
Bumper to bumper bracket (Non Federal) ***40-50Nm***
Bumper to bumperstrut (Federal) ***40-50Nm***
Guideblock to mounting bracket ***3.5-4.75Nm***
Horns to bracket ***22-28Nm***
Mounting bracket guide block to body ***7.5-10Nm***

SPANNER SIZES

8mm
10mm
13mm
19mm
No 20 Torx

1669B/66

FRONT QUARTER BUMPER LOCATING BRACKET

RENEW **76.22.20**

Remove the front beam 76.22.26
Slacken and remove the screws securing the locating bracket to the body and remove the bracket (1 Fig 2).
Reverse the removal procedure to refit the replacement bracket.

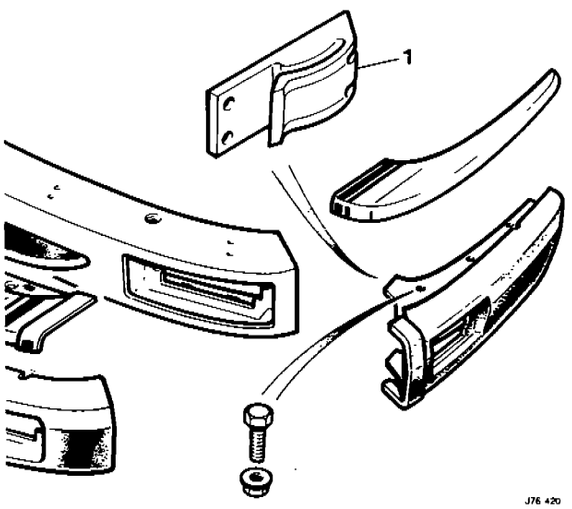


Fig 2

DATA

TORQUE FIGURES

Bumper mounting brackets to body (Non Federal) ***23-27Nm***
Bumper mounting struts to body (Federal) ***23-27Nm***
Bumper to bumper bracket (Non Federal) ***40-50Nm***
Bumper to bumper strut (Federal) ***40-50Nm***
Guide block to mounting bracket ***3.5-4.75Nm***

DATA

TORQUE FIGURES

Horns to bracket ***22-28Nm***
Mounting bracket guide block to body 7.5- ***10Nm***

SPANNE'RSIZES

8mm
1Omm
13mm
19mm
No 20 Torx

1669B/66

FRONTQUARTER BUMPER BLADE

RENEW **76.22.73**

Remove the front beam 76.22.26
Remove the nuts and bolts (1 Fig 1) securing the blade (2 **Fig 1**) **to the bumper.**
Remove and discard the blade.
Reverse the removal procedure to refit the replacement blade.

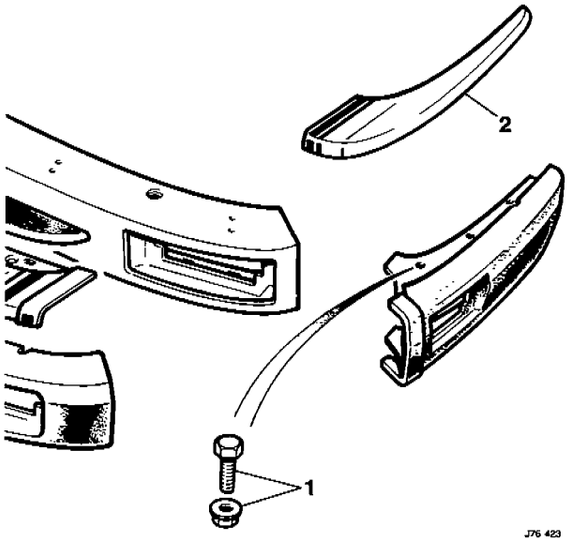


Fig 1

DATA

TORQUE FIGURES

Bumper mounting brackets to body (Non Federal) ***23-27Nm***
Bumper mounting struts to body (Federal) ***23-27Nm***
Bumper front blade to beam ***5-7Nm***
Bumper side blade to beam ***5-7Nm***
Bumper side ***to*** *mounting block* ***5-7Nm***
Bumper to bumper bracket (Non Federal) ***40-50Nm***
Bumper to bumper strut (Federal) ***40-50Nm***
Flexible mounting ***block*** *to beam* ***5-7Nm***
Guide ***block*** *to mounting bracket* ***3.5-4.75Nm***
Horns to bracket ***22-28Nm***
Mounting bracket guide block ***to*** *body* ***7.5-10Nm***

SPANNER SIZES

8mm
10mm
13mm
19mm
No 20 Torx

1669B

HEADLAMPTRIM FINISHER

RENEW **76.40.01**

Remove the radiator grille 76.55.07.
Remove the headlamp assembly 86.40.06/7.
Remove the four screws (1 Fig 1) securing the trim to the headlamp unit.
Reverse the removal procedure to refit the finisher.

0379b

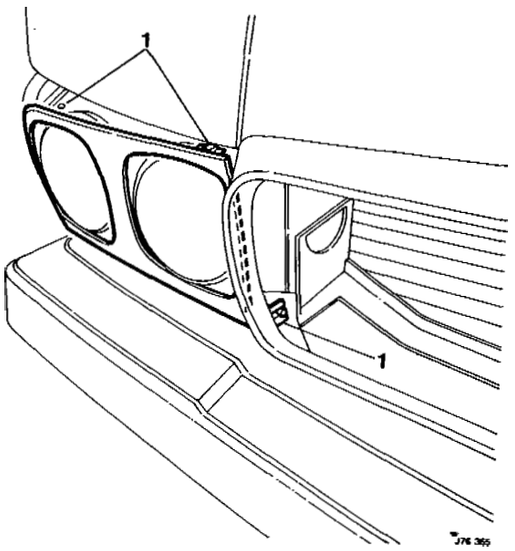


Fig 1

BONNET

RENEW **76.16.01**

Open the bonnet.
Remove the right hand insulation pad securing screws and remove the pad.
Disconnect the bonnet illumination lamp multi plugs.
Apply tape to the forward edge of the bonnet behind the grille surround.
Slacken the bonnet securing bolts (1 Fig 2) and disconnect the bonnet support struts (2 Fig 2).
Remove the bonnet securing bolts and remove the bonnet.
Remove the trim pad securing screws and remove the trim pad.
Remove the bonnet lamp securing screws, remove the tape securing the lamp harness to the bonnet and remove the lamps.
Remove the bonnet lock spring assemblies, remove the bonnet catch securing bolts and remove the catch.
Remove the bonnet support pivots and place the bonnet aside.
Reverse the removal procedure to refit, ensuring that the bonnet is aligned before the bonnet securing bolts are finally tightened.

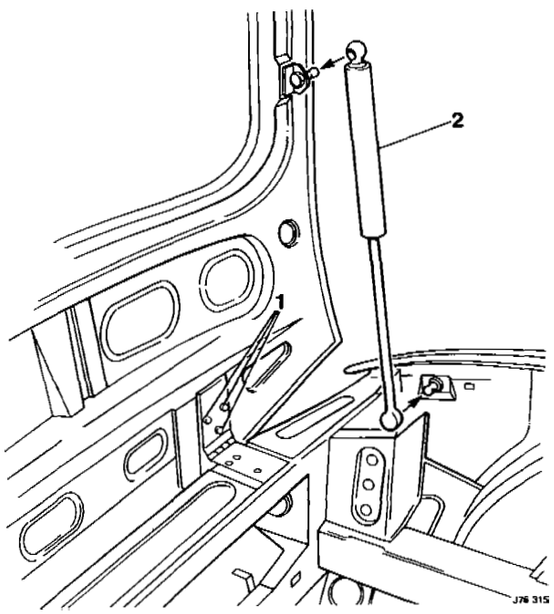


Fig. 2

DATA

SPANNER SIZES

13mm

0010b

BONNET INSULATION PAD

RENEW **76.16.06**

Open the bonnet and remove the ten self tapping screws and plain washers securing the insulation to the bonnet.
Hold the replacement insulation pad in position and secure with the ten screws and plain washer. Close the bonnet.

BONNETSEALING RUBBER REAR

RENEW **76.16.04**

Open the bonnet.
Starting from one side of the vehicle, prise the rubber seal (Fig 1) from the bulkhead/ inner wings. Discard the old seal.
Starting from the centre of the vehicle, fit the replacement seal to the bulkhead/inner wings, gradually working outwards.
Ensure the seal is firmly pressed down onto the channel edge.
Cut the outer edge of the seal as shown (Fig 1).
Press the remainder of the trim firmly down on each inner wing and trim off until they are of equal length.
Close the bonnet.

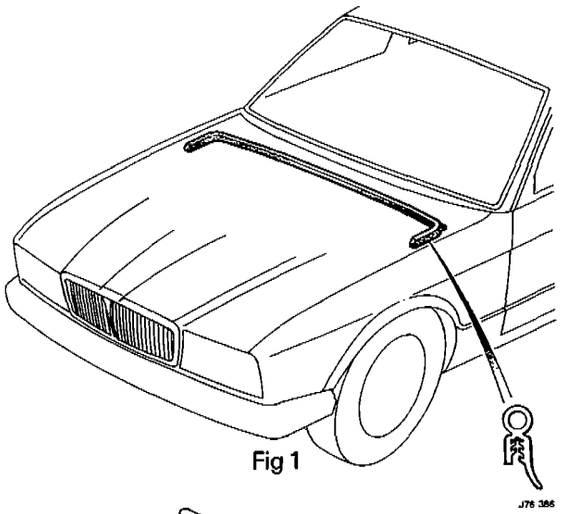


Fig 1

0394b

BONNET STRIKER ASSEMBLY

RENEW **76.16.24**

Open the bonnet, slacken the locknut (1 Fig 2) and unscrew the striker (2 Fig 2).
Replace any damaged components and reassemble.
A distance of 62 mm (1 Fig 3) from the end of the striker to the locknut is an advisable length to set the assembly to, prior to fitment to the vehicle.
Adjust the assembly until the bonnet is flush with the wing and the bulkhead.
Close the bonnet.

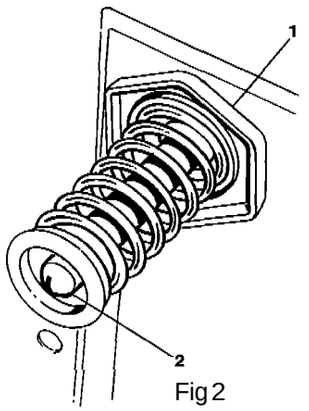


Fig 2

0388b

BONNET LOCK

RENEW ***76.00.00***

Open the bonnet and disconnect the lock operating cable (4 Fig 4) from the lock.
Remove the bolts securing the lock (5 Fig 4) to the body and remove the lock.
Reverse the removal procedure to refit the replacement lock ensuring that, prior to tightening, the lock is aligned with the striker.

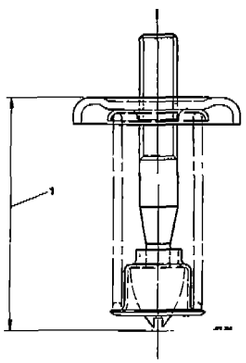


Fig 3

DATA

TORQUE FIGURES

Bonnet lock to body 7.5-10.25Nm

SPANNER SIZES

8mm
10mm

1669B/8

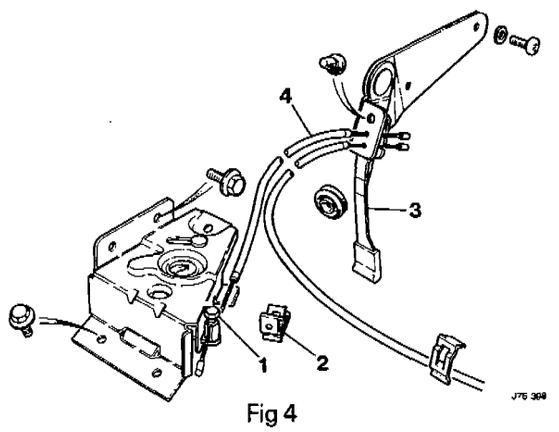


Fig 4

BONNETGAS STRUT

RENE **76.16.15**
Openthe bonnet.

Fit a suitable bonnet support.
Displace the upper strut pivot (1 Fig 1) from the pivot bolt.
Repeatfor the lower.
Removeand discard the strut (2 Fig 1).
Reverse the removal procedure to refit the replacement strut.

1669B/71

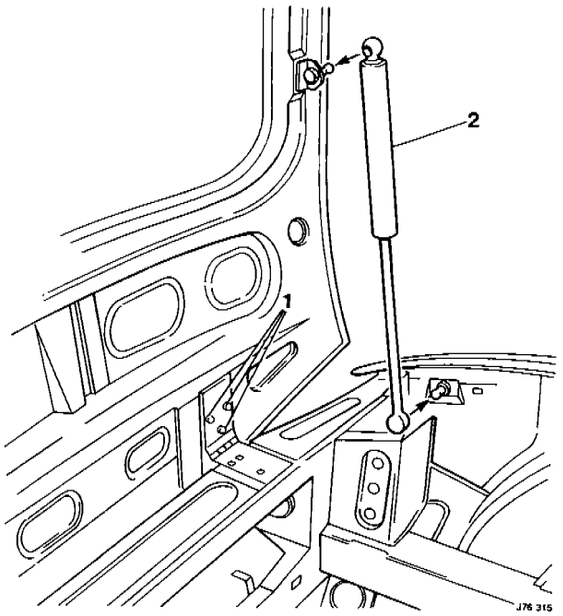


Fig 1

BONNET GAS STRUT-VEHICLE SET

RENEW **76.16.16**

Open the bonnet.
Fit a suitable bonnet support.
Displace the upper strut pivot (1 Fig 1) from the pivot bolt.
Repeatfor the lower.
Remove and discard the strut (2 Fig 1).
Repeat the procedure for the other strut.
Reverse the removal procedure to refit the replacement struts.

1669B/72

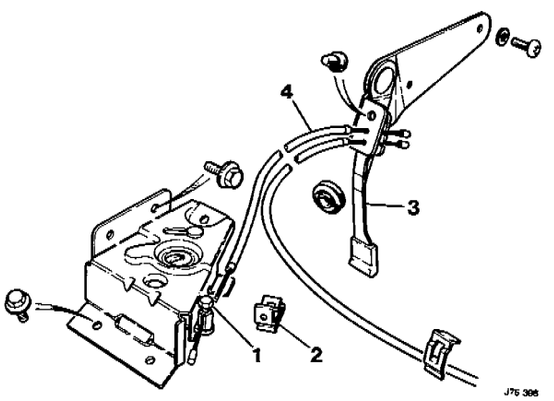


Fig 2

BONNET LOCK CONTROL CABLE

RENEW **76.16.29**

Open the bonnet.
Slacken the clamp bolt (1 Fig 2) securing the cable (4 Fig 2) to the lock actuator.
Disconnect the cable from the lock and from the mounting clip (2 Fig 2).
Displace the cable from the bulkhead mounting clips and remove the ratchet straps securing the cable to the pipes and harnesses.
Displace the cable from the remaining large ratchet straps.
Open the front door.
Remove the dash liner.
Pull the release handle and disconnect the cable (1 Fig 3) from the release handle and bracket.
Pull the cable through the bulkhead grommet and discard.
Reverse the removal procedure to fit the replacement cable.

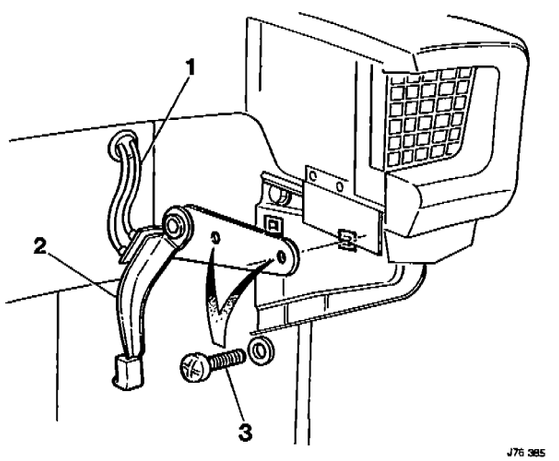


Fig 3

DATA

SPANNER SIZES

8mm
I Omm

1669B/72

BONNET LOCK CONTROLCABLE ASSE MBLY-VEHICLE SET

RENEW **76.16.35**

Open the bonnet.
Slacken the clamp bolt (1 Fig 1) securing the cable (4 Fig 1) to the lock actuator.
Disconnect the cable from the lock and from the mounting clip (2 Fig 1).
Displace the cable from the bulkhead mounting clips and removethe cable securing ratchetstraps.
Displace the cable from the remaining large ratchet straps.
Open the driving side door.
Removethe dash liner.
Pull the release handle and disconnect the cable (1 Fig 2) from the release handle (2 Fig 2) and bracket.
Pull the cable through the bulkhead grommet and discard.
Repeatthe procedure for the remainingcable.
Reverse the removal procedure to fit the replacement cables.

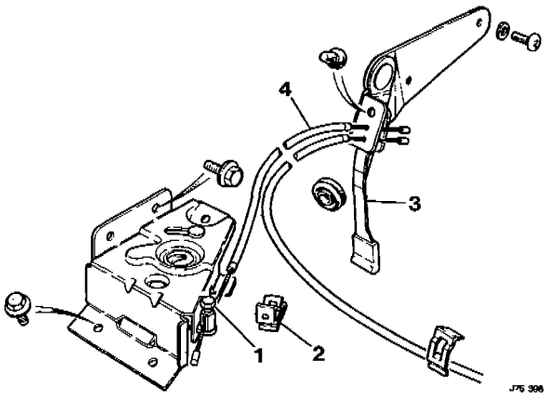


Fig 1

DATA

SPANNER SIZES

8mm
1Omm

1669B/72

BONNET LOCK RELEASE HANDLE

RENEW **76.16.30**

Openthe bonnet.
Slacken the clamp bolt securing the cable to the lock actuator.
Repeatthe procedurefor the other side.
Openthe driving side door.
Removethe dash liner.
Disconnect the inner cables (1 Fig 2) from the bonnet release handle (2 Fig 2).
Removethe bolts securing the bonnet release handle (3 Fig 2) to the body, remove the cables from the handle and removefrom the vehicle.
Reverse the removal procedure to fit the replacement handle.

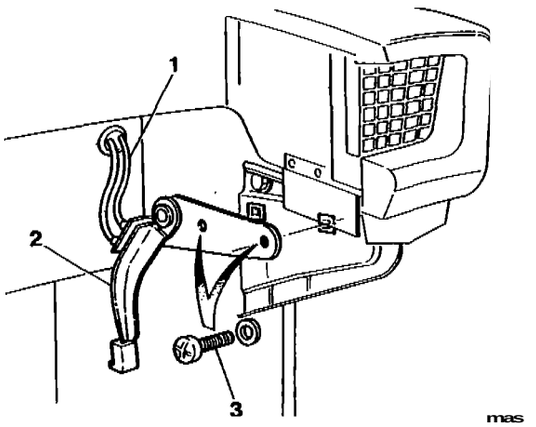


Fig 2

DATA

TORQUE FIGURES

Bonnet lock release handle to body 7-10Nm

SPANNER SIZES

8mm
10mm

BONNET HINGE (NON FEDERAL)

RENEW **76.16.11**

Remove the screw (situated at the top) securing the front grille and remove the grille (Fig 1).
Open the bonnet.
Secure the bonnet with a suitable support.
Remove the bonnet hinge securing nuts and bolts (Fig 2).
Remove and discard the hinge.
Position the replacement hinge on the front panel locating the studs in the holes.
Open the hinge and align with the securing holes in the bonnet.
Fit and tighten the hinge to bonnet securing bolts.
Fit but do not fully tighten the the hing securing nuts.
Remove the bonnet support and carefully lower the the bonnet to check the alignment, open the bonnet slacken the hinge securing nuts and position the bonnet as required.
Fully tighten the securing nuts.
Close the bonnet and check the alignment.
Refit the radiator grille and close the bonnet.

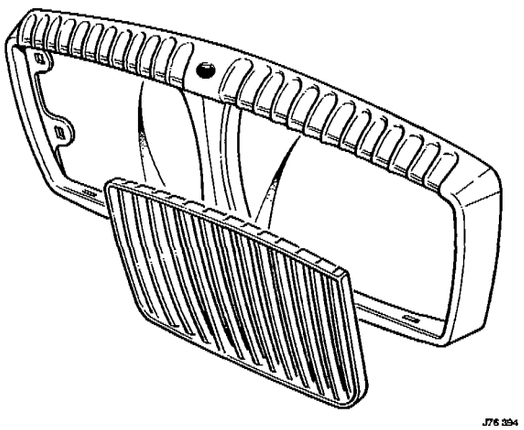


Fig 1

DATA

SPANNER SIZES

13mm

1669B/83

BONNET HINGE VEHICLE SET (NON FEDERAL)

RENEW **76.16.12**

Remove the two screws (situated at the top) securing each front grille and remove the grille (Fig 1).
Open the bonnet.
Secure the bonnet with a suitable support.
Remove the bonnet hinge securing nuts and bolts (Fig 2).
Remove and discard the hinge.
Position the replacement hinge on the front panel locating the studs in the holes.
Open the hinge and align with the securing holes in the bonnet.
Fit and tighten the hinge to bonnet securing bolts.
Fit but do not fully tighten the the hinge securing nuts.
Remove the bonnet support and carefully lower the the bonnet to check the alignment.

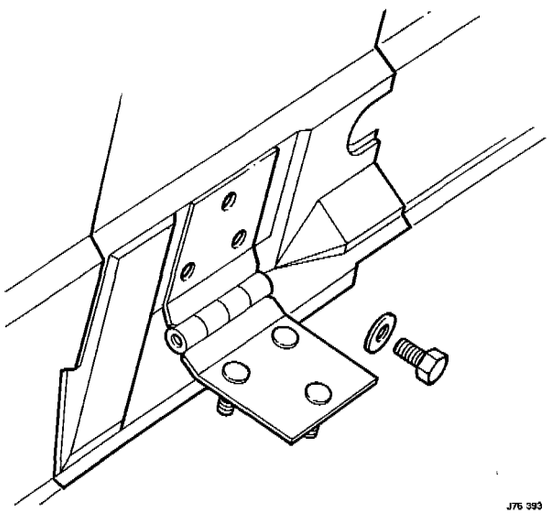


Fig 2

Open the bonnet, slacken the hinge securing nuts and position the bonnet as required.
Fully tighten the securing nuts.
Close the bonnet and check the alignment.
Repeat the procedure for the other hinge.
Refit the radiator grille and close the bonnet.

DATA

SPANNER SIZES

13mm

1669B/83

BONNET HINGE (FEDERAL)

RENEW **76.16.11**

Remove the screw (situated at the top) securing the front grille and remove the grille (Fig 1).
Remove the two bolts each side securing the grille support brackets to the body.
Remove the grille assembly and remove the grille support brackets and four plastic thread inserts (Fig 2).
Open the bonnet.
Secure the bonnet with a suitable support.
Remove the bonnet hinge securing nuts and bolts
Remove and discard the hinge.
Position the replacement hinge on the front panel locating the studs in the holes.
Open the hinge and align with the securing holes in the bonnet.
Fit and tighten the hinge to bonnet securing bolts.
Fit but do not fully tighten the the hinge securing nuts.
Remove the bonnet support and carefully lower the the bonnet to check the alignment.
Open the bonnet, slacken the hinge securing nuts and position the bonnet as required.
Fully tighten the securing nuts.
Close the bonnet and check the alignment.
Refit the radiator grille and surround.
Close the bonnet.

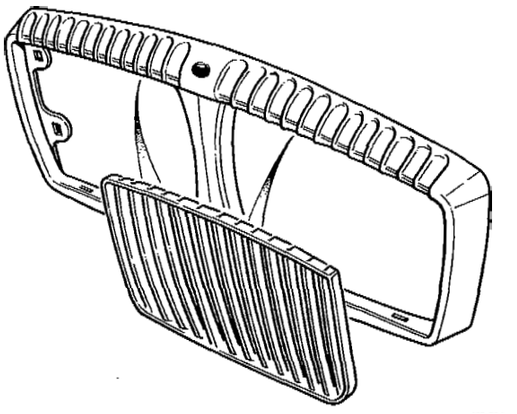


Fig 1

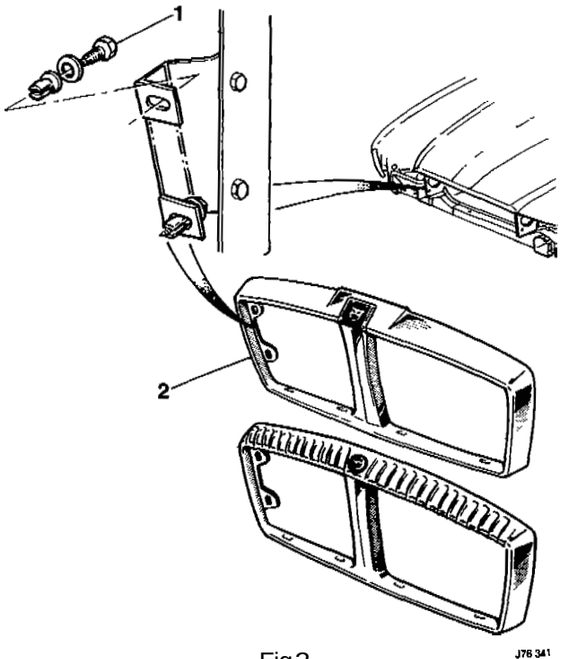


Fig 2

DATA

SPANNER SIZES

10mm
13mm

1669B/84

BONNET HINGEVEHICLE SET (FEDERAL)

RENEW **76.16.12**

Remove the two screws (situated at the top) securing each front grille and remove the grille (Fig 1).
Remove the two bolts each side securing the grille support brackets to the body.
Remove the grille assembly and remove the grille support brackets and four plastic thread inserts (Fig 2).
Open the bonnet.
Secure the bonnet with a suitable support.
Remove the bonnet hinge securing nuts and bolts (Fig 3).
Remove and discard the hinge.
Position the replacement hinge on the front panel locating the studs in the holes.
Open the hinge and align with the securing holes in the bonnet.
Fit and tighten the hinge to bonnet securing bolts.
Fit but do not fully tighten the the hinge securing nuts.
Remove the bonnet **support** and carefully lower the the bonnet to check the alignment, open the bonnet slacken the hinge securing nuts and position the bonnet as required.
Fully tighten the securing nuts.
Close the bonnet and check the alignment.
Repeat the procedure for the other hinge.
Refit the radiator grille and surround.
Close the bonnet.

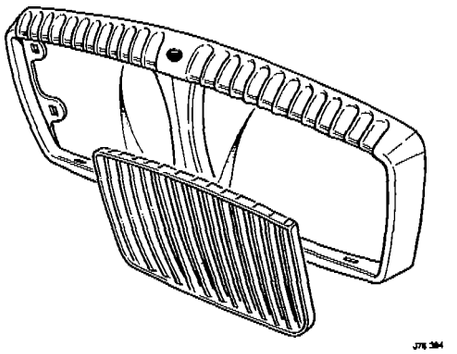


Fig 1

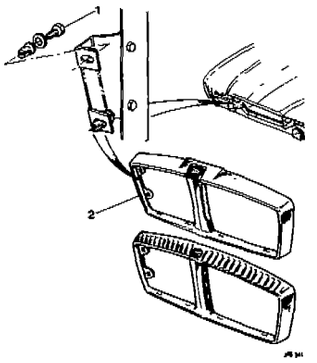


Fig 2

DATA

SPANNER SIZES

1 Ornrn
13mm

1669B/85

FRONT DOOR ARMREST

RENEW **76.34.22**

Open the door.
Remove the front door trim pad veneer panel 76.47.11.
Remove the front door upper trim pad 76.34.02.
Remove the front door lower trim **pad** 76.34.03.
Remove the screws securing the armrest to the trim pad (Fig 4). disconnect the speaker block connector **(Fig** 4) **and** remove the armrest from the trim pad.

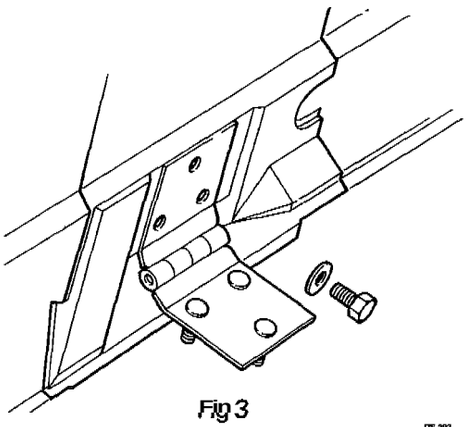


Fig 3

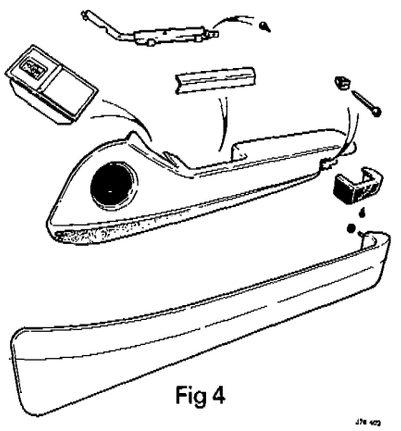


Fig 4

Remove the screws (Fig 4 page 30) securing the switch panel support bracket (Fig 4 page 30) to the armrest (Fig 4 page 30) and remove the bracket.
Displace the switch panel/ashtray (for access).
Disconnect the puddle lamp feed wires and the securing screws, remove the lamp assembly.
Remove the switch and harness assembly from the armrest and discard the armrest.
Reverse the removal procedure to refit the replacement armrest.

DATA

SPANNER SIZES

No 4 Pozi

FRONT DOOR GLASS

RENEW **76.31.01**

Open the door.
Remove the front door trim pad veneer panel 76.47.11.
Remove the front door upper trim pad 76.34.02.
Remove the front door lower trim pad 76.34.03.
Fit tape (1 Fig 1) over the door glass (2 Fig 1) and frame (3 Fig 1) to secure the glass.
Remove the screws securing the window lift motor to the door frame.
Remove the screws securing the window regulator lift guide.
Disconnect the exterior mirror and regulator multi plug connectors.
Disconnect the window lift mechanism from the door glass.
Lower the window lift motor to the bottom of the door and displace the channel rubber from the front channel for access to the securing screw.
Remove the screw (Fig 2) securing the door glass frame to the front mounting bracket
Remove the screws (Fig 2) securing the door glass frame to the door, remove the spacer plate and remove the door glass and frame assembly, remove the tape from the glass and remove the glass from the frame.
Reverse the removal procedure to refit the replacement glass.

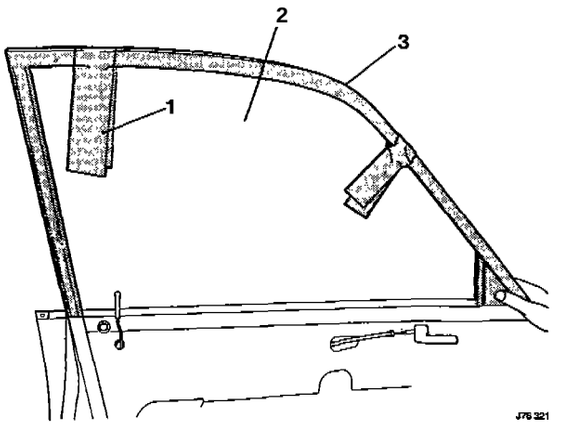


Fig 1

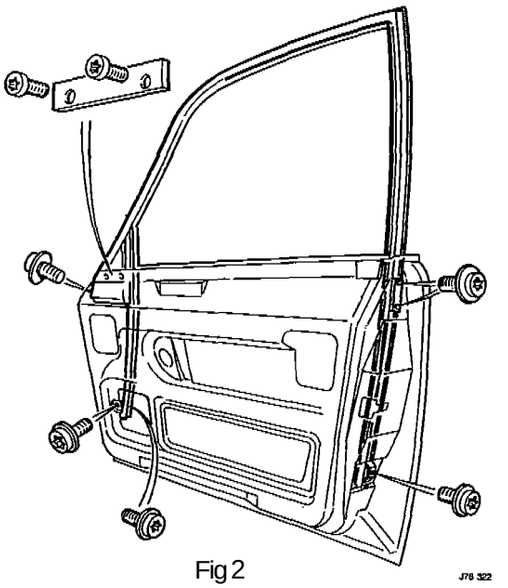


Fig 2

DATA

TORQUE FIGURES

Door glass clamping strip to door **7-10Nm**
Door glass regulator and slide channel to door **7-10Nm**
Setscrew front lower frame fixing to door **7-10Nm**
Setscrew front upper frame fixing to door **7-10Nm**
Setscrew rear lower frame fixing to door **7-10Nm**
Setscrew rear upper frame fixing to door **7-10Nm**

SPANNER SIZES

10mm
Torx bit No 30

0016b

FRONT DOOR GLASS CHANNEL RUBBER

RENEW **76.31.13**

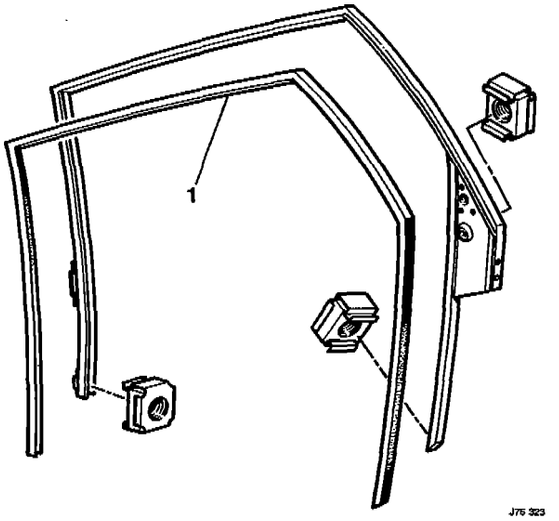


Fig 1

Open the door.
Remove the front door trim pad veneer panel 76.47.11.
Remove the front door upper trim pad 76.34.02.
Remove the front door lower trim pad 76.34.03.
Remove the exterior mirror 76.10.52.
Remove the front door waist rail moulding 76.43.04.
Remove the front door glass 76.31.01
Remove the glass channel rubber (1 Fig 1).
Refit the replacement rubber to the channel in frame, engage corners and then fully seat the remainder of the rubber and reverse the remaining removal procedure to refit.

DATA

TORQUE FIGURES

Door glass clamping strip to door **7-10Nm**
Door glass regulator and slide channel to door **7-10Nm**
Setscrew front lower frame fixing to door **7-10Nm**
Setscrew front upper frame fixing to door **7-10Nm**
Setscrew rear lower frame fixing to door **7-10Nm**
Setscrew rear upper frame fixing to door **7-10Nm**

SPANNER SIZES

10mm

Torx bit No 30

FRONT DOOR GLASS FRAME

RENEW **76.31.51**

Open the door
Remove the front door trim pad veneer panel 76.47.11.
Remove the front door upper trim pad 76.34.02.
Remove the front door lower trim pad 76.34.03.
Remove the exterior mirror 76.10.52.
Remove the front door waist rail moulding 76.43.04.
Remove the front door glass 76.31.01
Remove the front **door** glass channel rubber 76.31.13.
Remove the upper frame seal from the frame and place the frame **aside.**
Apply soft soap to the frame apeture and starting with the rear of the seal at the front of the frame slide the seal into position.
Reverse the removal procedure to refit.

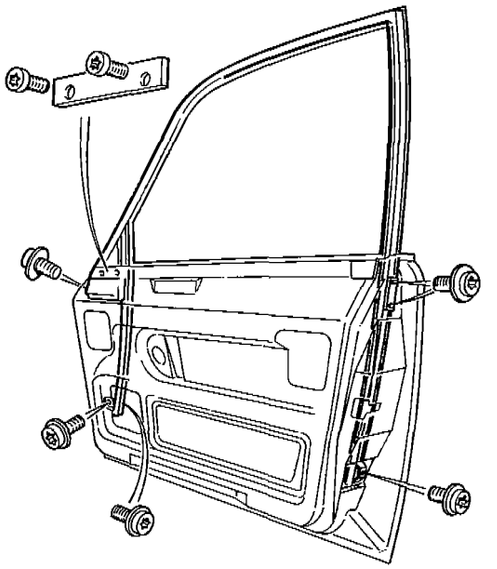


Fig 1 J76 325

DATA

TORQUE FIGURES

Door glass clamping strip to door 7-10Nm
Door glass regulator and slide channel to door 7-10Nm
Set screw front lower frame fixing to door 7-10Nm
Set screw front upper frame fixing to door 7-10Nm
Set screw rear lower frame fixing to door 7-10Nm
Set screw rear upper frame fixing to door 7-10Nm

SPANNER SIZES

10mm

Torx bit No 30

0020b

FRONT DOOR HANDLE

RENEW **76.58.01**

Open the door
Remove the front door trim pad veneer panel 76.47.11
Remove the front door upper trim pad 76.34.02.
Remove the front door lower trim pad 76.34.03.

Remove the door aperture closing plate.
Displace the weather shield and remove the door handle to linkage to lock mechanism retaining clip.
Disconnect the door handle linkage.
Cut and remove the ratchet strap securing the switch harness.
Disconnect the switch harness multi plug and reposition away from the door locating tangs.
Remove the door handle assembly securing nuts and remove the clamp (Fig 1).
Displace the door handle from the door to provide access to the private lock operating rod.
Disconnect the operating rod from the plastic cam and remove the door handle.
Remove the operating rod.
Remove the screws securing the central locking micro switch and discard the tape securing the harness to the handle body.
Remove the micro switch assembly.
Remove the handle clamp securing studs.
Discard the handle.
Reverse the removal procedure to fit the replacement door handle.

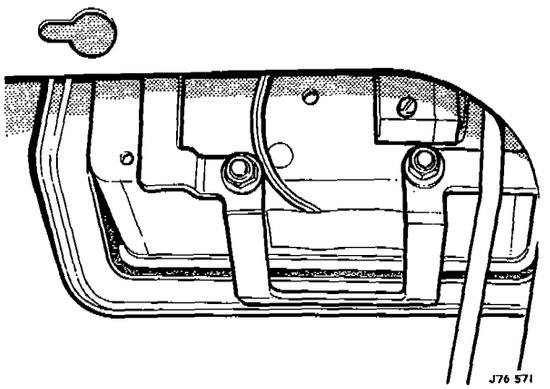


Fig 1

DATA

TORQUE FIGURES

Door handle to door 3.5-4.5Nm

SPANNER SIZES

8mm

0058b

FRONT DOOR INSIDE HANDLE

RENEW **76.58.20**

Open the door.
Remove the front door trim panel veneer panel 76.47.11
Reposition the inner cable (1 Fig 2) from the door handle, disconnect the outer handle assembly securing sleeve and disconnect the cable from the handle.
Operate the handle for access, remove the screw (2 Fig 2) and bolt (2 Fig 2) securing the handle assembly.
Remove the handle and discard.
Reverse the removal procedure to refit the replacement handle.

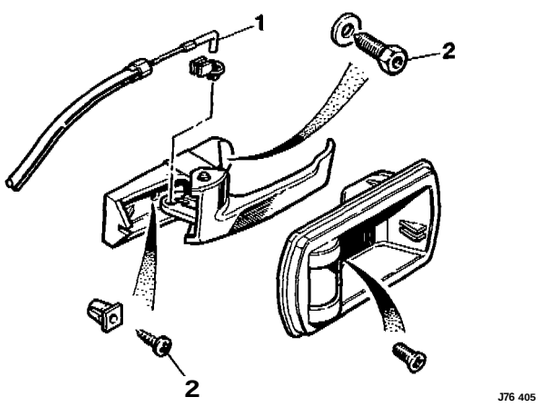


Fig 2

DATA

TORQUE FIGURES

Inner handle to door 4-5.4Nm

SPANNER SIZES

10mm

FRONT DOOR LOCK

RENEW **76.37.12**

Open the door
Remove the front door trim pad veneer panel 76.47.11.
Remove the front door upper trim pad 76.34.02.
Remove the front door lower trim pad 76.34.03.
Remove the front door glass 76.31.01
Displace the inner lock control rod securing clip and remove the rod/knob assembly.
Remove the remote cable to bracket retaining clip and reposition the cable from the bracket.
Reposition the inner cable from the lock release arm and remove the outer handle operating rod retaining clip.
Reposition the rod from the retaining clip and displace the rod from the private lock.
Cut and remove the door lock harness to door panel ratchet straps and disconnect the multi plugs.
Remove the lock securing screws and remove the lock assembly.
Remove the linkage rod.
Remove the motor securing screws and remove the motor.
Discard the lock assembly.
Reverse the removal procedure to refit the lock,

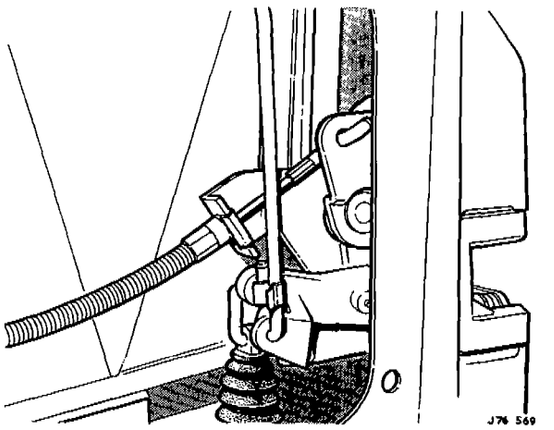


Fig 1

DATA

TORQUE FIGURES

Door lock to door 7-10Nm

SPANNER SIZES

8mm
10mm

No 30 Torx

0029b

FRONT DOOR REMOTE CONTROL OPERATING CABLE

RENEW **76.37.67**

Open the door
Remove the front door trim pad veneer panel 76.47.11.
Remove the front door upper trim pad 76.34.02.
Remove the front door lower trim pad 76.34.03.
Remove the **clip** securing the inner cable to the door lock and disconnect the cable from the lock assembly.
Remove the clip (2 Fig 1) securing the outer cable (3 Fig 1) to the door lock assembly, disconnect the cable from the bracket (4 Fig 1) and the inner cable from the interior door handle securing sleeve.
Disconnect the cable from the interior handle assembly, remove the securing sleeve from from the cable.
Remove and discard the cable.
Reverse the removal procedure to refit the replacement cable.

0031b

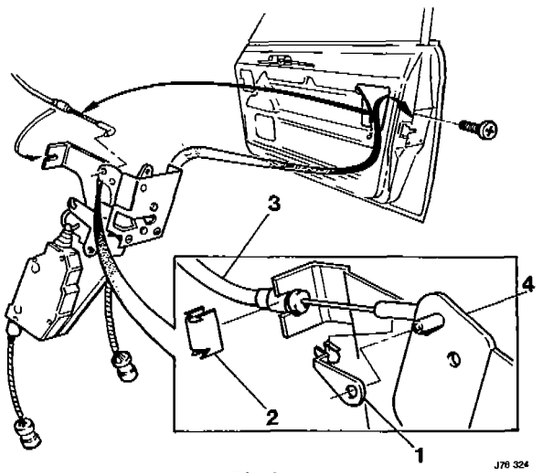


Fig 1

FRONT DOOR TRIM PAD VENEER PANEL

RENEW **76.47.11**

Open the door.
Position the inner door handle in the open position and remove the inner handle escutcheon plate blank (1 Fig 2).
Remove the screw (2 Fig 2) securing the escutcheon plate (3 Fig 2), remove the plate and gasket.
Carefully pull the veneer panel (4 Fig 2) to **release** the retaining clips.
Remove the screws securing the retaining clip and remove the retaining clip assemblies.
Discard the veneer panel.
Reverse the removal procedure to fit the replacement veneer.

0041b

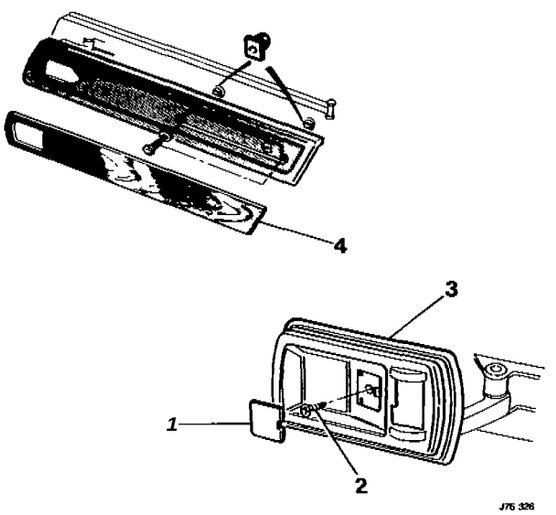


Fig 2

FRONT DOOR LOWER TRIM PAD

RENEW **76.34.03**

Open the door.
Remove the front door trim pad veneer panel 76.47.11.
Remove the front door upper trim pad 76.34.02.
Remove the lower trim pad securing screw, remove the puddle lamp lens and remove the screw securing the lower trim pad/puddle lamp.

Displace the trim pad from the retaining clips and disconnect the door harness block connectors.
Remove the lower trim pad assembly.
Remove the front door armrest 76.34.22
Remove the door speaker securing nuts and remove the speaker.
Remove the door pocket to trim pad securing screws (Fig 1) and remove the door pocket,
Remove the locating bracket securing screws and remove the bracket.
Discard the trim pad.
Fit the locating bracket to the replacement trim and reverse the remaining procedure to refit the trim pad.

0024b

FRONT DOOR WAIST RAIL MOULDING

RENEW **76.43.04**

Open the door
Remove the front door trim pad veneer panel 76.47.1 **1.**
Remove the front door upper trim pad 76.34.02.
Remove the front door lower trim pad 76.34.03.
Carefully remove the moulding from the front door.
Using a suitable block to prevent damage to the moulding, carefully fit and seat the replacement moulding to the **door.**
Reverse the remaining procedure to fit the replacement moulding.

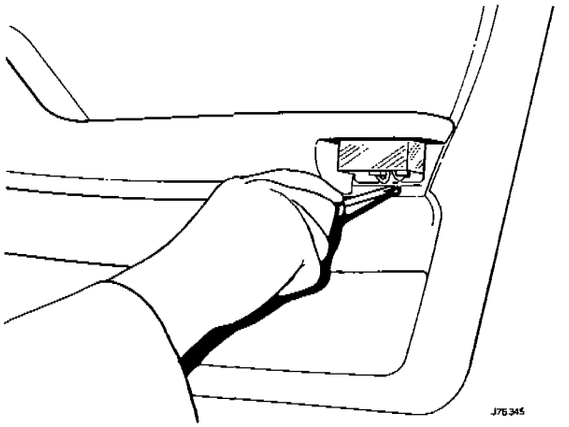


Fig 1

0033b

FRONT DOOR LOCK STRIKER

RENEW **76.37.23**

Open the door and slacken the pin **(1** Fig 2), remove the pin from the 'B' post and collect the washer.
Reverse the removal procedure to fit a replacement striker pin.

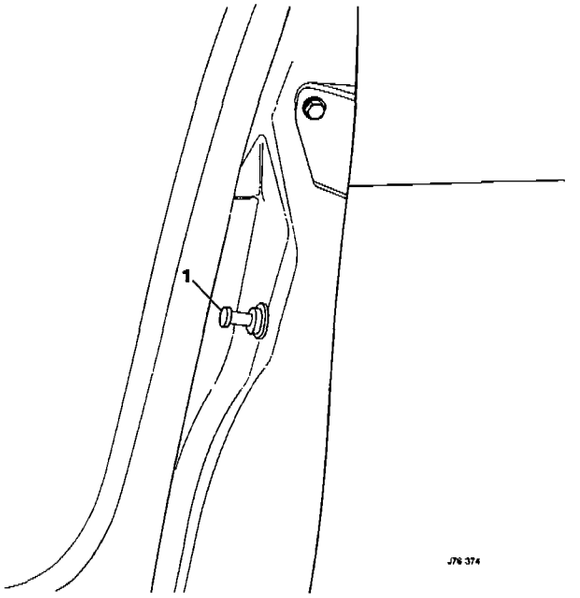


Fig 2

DATA

TORQUE FIGURES

Striker pin to 'B' post 24-30"

SPANNER SIZES

17mm

1669B/53

FRONT DOOR SEAL

RENEW **76.40.01**

Open the door.
Remove the end panel finishers and **pull** the **top** finisher clear of the tread plate.
Remove the five tread plate securing screws and remove the tread plate.
Remove the seal and clean the channel (Fig 1).
Apply Kent clear sealer to the 'C' channel butt joints and Solumin to the section of the seal above the sill section.
Position the replacement seal and locate in the upper corners, secure with tape and using soft soap seat the door seal in the channel.
Remove the tape and slide the front lower edge and corner of the seal into position.
Clean off all soft soap and refit the sill tread plate.

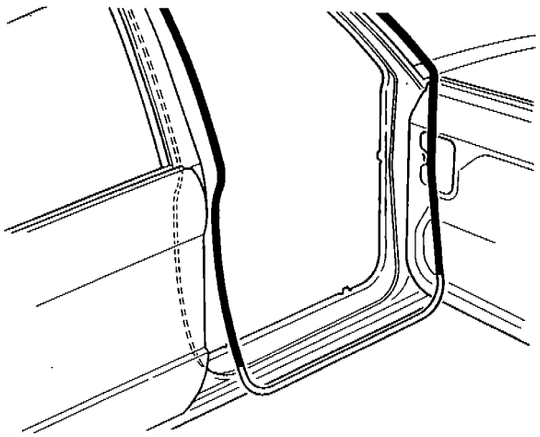


Fig 1

DATA

OILS/SEALANTS/LUBRICANTS

Two 'C' channel butt joints Kent clear sealer
Seal (above sill section) Solumin

1669B/69

FRONT DOOR UPPER TRIM PAD

RENEW **76.34.02**

Open the door.
Remove the front door trim pad veneer panel 76.47.11
Remove the upper trim pad securing clip (Fig 2) and screws (Fig 2).
Lift the trim pad to release from the door, remove the inner waist rail seal.
Reverse the removal procedure to refit the replacement upper trim pad.

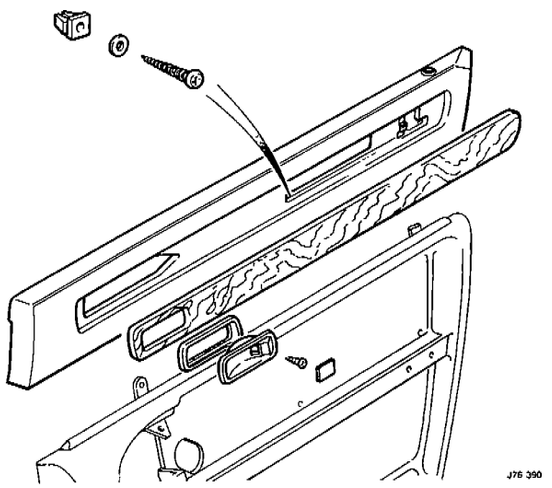


Fig 2

0023b

REAR DOOR GLASS

RENEW **76.31.02**

Open the door.
Remove the rear door trim pad veneer panel 76.47.12.
Remove the rear door upper trim pad 76.34.05.
Remove the rear door lower trim pad 76.34.06.

Remove the door aperture plastic closing panels.
Fit adhesive tape (1 Fig 1) over the door frame to secure the glass.
Remove the screws and nuts (2 Fig 1) securing the window lift motor to the door glass.
Remove the screws securing the window lift guide to the door and carefully displace the mechanism (3 Fig 1) from the door glass and position in the bottom of the door.
Remove the grommet to gain access to the rear frame upper securing screws and remove the screws securing the glass frame to the door.
Lift the glass and frame assembly from the door, remove the adhesive tape securing the glass to the door frame and remove the **glass.**
Reverse the removal procedure to refit the replacement glass.

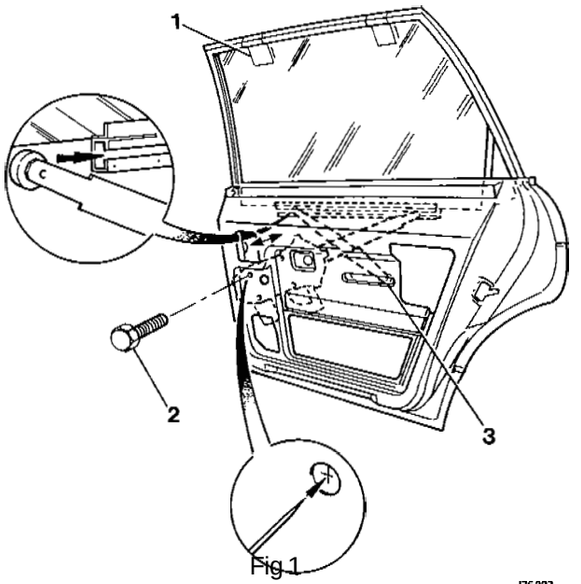


Fig 1

J76327

DATA

TORQUE FIGURES

Door glass clamping strip to door 7-10Nm
Door glass regulator and slide channel to door 8-10Nm
Setscrew front lower frame fixing to door 7-10Nm
Set screw frcnt upper frame fixing to door 7-10Nm
Set screw rear inboard frame fixing to door 7-10Nm
Setscrew rear lower frame fixing to door 7-10Nm
Setscrew rear upper frame fixing to door 7-10Nm

SPANNER SIZES

10mm
Torx bit No 30

0017b

REAR DOOR ARMREST

RENEW 76.34.23

Open the door
Remove the front door trim pad veneer panel 76.47.11.
Remove the front door upper trim pad 76.34.02.
Remove the front door lower trim pad 76.34.03.
Remove the screws securing the armrest to the trim pad (Fig 2).
Disconnect the speaker block connector and remove the armrest from the trim **pad.**

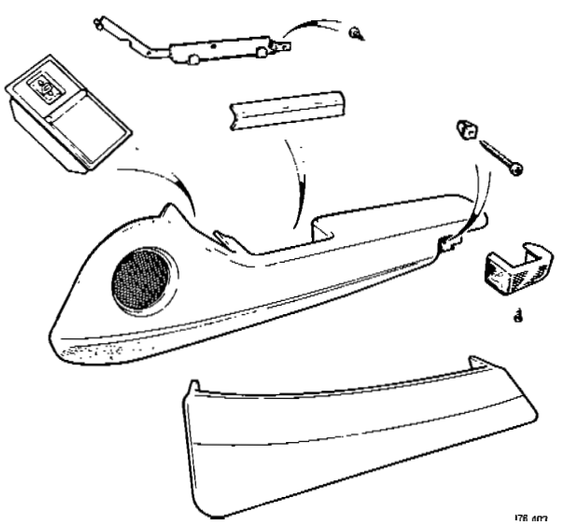


Fig 2

Remove the screws securing the switch panel support bracket to the armrest and remove the bracket.
Displace the switch panel/ashtray for access and disconnect the puddle lamp feed wires.
Remove the puddle lamp securing screws and remove the lamp assembiy.
Remove the switch and harness assembly and discard the armrest.
Reverse the removal procedure to refit.

0028b

REAR DOOR GLASS CHANNEL RUBBER

RENEW **76.31.14**

Open the door.
Remove the front door trim pad veneer panel 76.47.11.
Remove the front door upper trim pad 76.34.02.
Remove the front door lower trim pad 76.34.03.
Remove the rear door waist rail moulding 76.43.05.
Remove the rear door glass 76.31.02.
Remove the plastic finisher screw and plastic finisher.
Remove the glass channel rubber (Fig 1).
Place the replacement rubber in the frame and fit the upper corners of the rubber to the frame first and fully seat the remaining rubber in the frame.
Reverse the remaining procedure to refit.

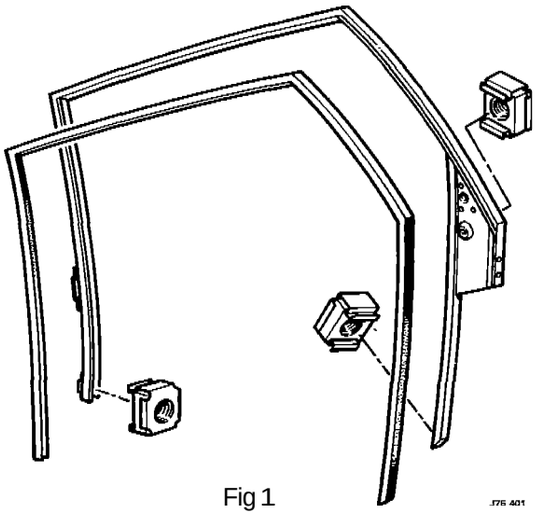


Fig 1 .775 401

DATA

TORQUE FIGURES

Door glass clamping strip to door 7-10Nm
Door glass regulator and slide channel to door 8-10Nm
Set screw front lower frame fixing to door 7-10Nm
Set screw front upper frame fixing to door 7-10Nm
Set screw rear inboard frame fixing to door 7-10Nm
Set screw rear lower frame fixing to door 7-10Nm
Set screw rear upper frame fixing to door 7-10Nm

SPANNER SIZES

10mm

Torx bit No 30

0019b

REAR DOOR GLASS FRAME

RENEW **76.31.61**

Open the door.
Remove the front door trim pad veneer panel 76.47.11.
Remove the front door upper trim pad 76.34.02.
Remove the front door lower trim pad 76.34.03.
Remove the rear door waist rail moulding 76.43.05.
Remove the rear door glass 76.31.02.
Remove the rear door glass channel rubber 76.31.14.
Remove the outer finisher securing screw and remove the outer finisher.
Remove the upper seal from the frame.
Apply soft soap to the upper seal fitment area of the replacement frame.
Starting with the front of the seal at the rear of the frame, slide the seal into position.
Reverse the remaining removal procedure to refit the replacement frame.

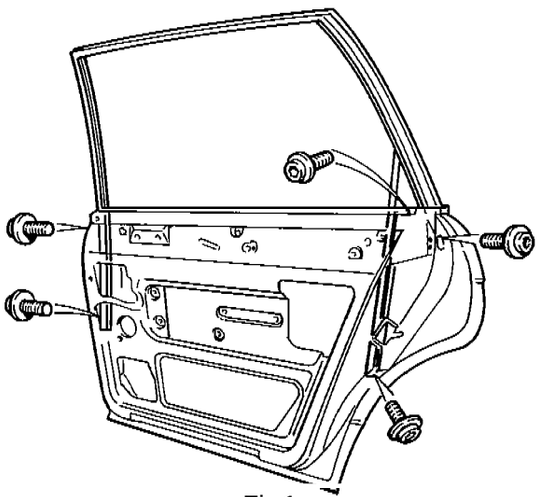


Fig 1 J76 349

DATA

TORQUE FIGURES

Door glass clamping strip to door ***7-10Nm***
Door ***glass*** *regulator and slide channel to door* ***8-10Nm***
Setscrew front lower frame fixing to door ***7-10Nm***
Setscrew front ***upper*** *frame fixing to door* ***7-10Nm***
Setscrew rear inboard frame fixing to door ***7-10Nm***
Setscrew rear lower frame fixing to door ***7-10Nm***
Set screw rear upper frame fixing to door ***7-10Nm***

SPANNER SIZES

10mm
Torx bit No 30

0022b

REAR DOOR HANDLE

RENEW **76.58.02**

Open the door.
Remove the rear door trim pad veneer panel 76.47.11
Remove the rear door upper trim pad 76.34.05.
Remove the rear door lower trim pad 76.34.06.

Remove the door aperture plastic closing panel.
Carefully displace the door weather shield for access.
Remove the door handle operating rod to lock retaining clip peg and reposition the rod from the retaining clip.
Remove the front nut securing the handle clamp bracket (1 Fig 1) and slacken but do not remove the rear securing bolt and remove the clamp bracket.
Remove the handle assembly and remove the securing stud and bolt.
Discard the handle.
Reverse the removal procedure to refit the replacement handle.

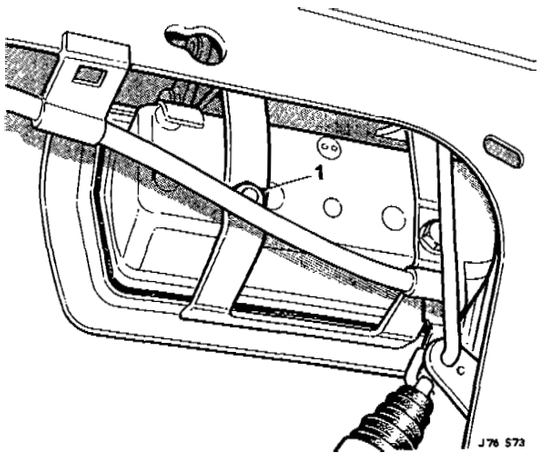


Fig 1

DATA

TORQUE FIGURES

Door handle to door ***3.5-4.5Nm***

SPANNER SIZES

8mm

0059b

REAR DOOR INSIDE HANDLE

RENEW **76.58.19**

Open the door.
Remove the rear door trim pad veneer panel. 76.47.12
Disconnect the inner cable (Fig 2) from the door handle and displace the outer cable to handle assembly securing sleeve.
Disconnect the cable from the handle assembly, operate the handle for access, remove the screw and bolt securing the handle assembly, remove and discard the handle.
Reverse the removal procedure to refit the repiacewment handle.

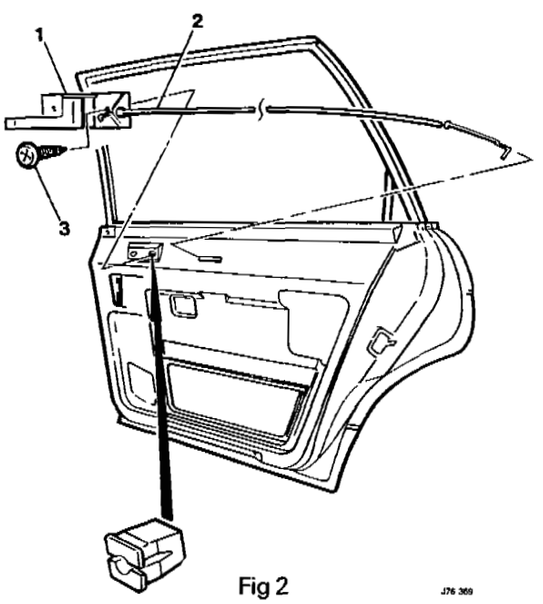


Fig 2

DATA

TORQUE FIGURES

Door inside handle to door ***4-5.4Nm***

SPANNER SIZES

10mm

0060b

REAR DOOR LOCK

RENEW **76.37.13**

Open the door
Remove the front door trim pad veneer panel 76.47.11.
Remove the front door upper trim pad 76.34.02.
Remove the front door lower trim pad 76.34.03.
Remove the rear door glass 76.31.02
Displace the inner lock control rod securing clip and remove the rod/knob assembly.
Remove the remote cable to bracket retaining clip and reposition the cable from the bracket.
Reposition the inner cable from the lock release arm and remove the outer handle operating rod retaining clip.
Repposition the rod from the retaining clip and displace the rod from the private lock.
Cut and remove the door lock harness to door panel ratchet straps and disconnect the multi plugs.
Remove the lock securing screws (1 Fig 1) and remove the lock assembly.
Remove the linkage rod.
Remove the motor securing screws and remove the motor.
Discard the lock assembly.
Reverse the removal procedure to refit the replacement lock.

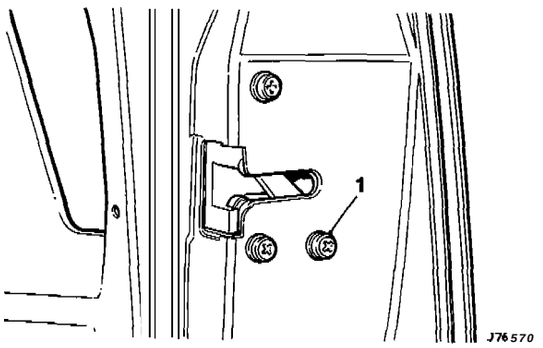


Fig 1

DATA

TORQUE FIGURES

Door lock to door 7-10Nm

SPANNER SIZES

8mm
10mm

No 30 Torx

0030b

REAR DOOR REMOTE CONTROL OPERATING CABLE

RENEW ***76.37.68***

Open the door
Remove the front door trim pad veneer panel 76.47.11
Remove the front door upper trim pad 76.34.02.
Remove the front door lower trim pad 76.34.03.

Disconnect the cable from the centre support bracket and remove the clip securing the interior locking rod to the linkage, remove the locking rod.
Release and remove the clip securing the operating rod to the cable and disconnect the cable from the lock.
Remove the clip securing the outer cable to the lock bracket, disconnect the cable from the bracket.
Reposition the inner cable to the interior handle assembly locking sleeve, disconnect the inner cable from the interior handle and reposition the cable.
Remove the securing sleeve from the cable and remove the cable.
Reverse the removal procedure to refit the cable to the door.

0032b

REAR DOOR LOWER TRIM PAD

RENEW **76.34.06**

Open the door.
Remove the front door trim pad veneer panel **76.47.11**.
Remove the front door upper trim pad **76.34.02.**
Remove the rear door trim finisher, remove the trim pad centre securing screw.
Remove the puddle lamp lens and the lower trim pad securing screw.
Displace the trim pad from the retaining clips, disconnect the door block harness connectors and remove the trim pad assembly.
Remove the rear door armrest and the nuts securing the speaker.
Remove the speaker.
Remove the screws securing the door pocket to the trim pad and remove the door pocket.
Discard the trim pad.
Reverse the removal procedure to refit the trim pad.

0026b

REAR DOOR TRIM PAD VENEER PANEL

RENEW **76.47.12**

Open the door.
Position the inner door handle in the open position and remove the inner handle escutcheon plate blank (1 Fig 1).
Remove the screw (2 Fig 1) securing the escutcheon plate (3 Fig 1), remove the plate and gasket.
Carefully pull the veneer panel (4 Fig 1) to relaese the retaining clips.
Remove the Screws securing the retaining clip and remove the retaining clip assemblies.
Discard the veneer panel.
Reverse the removal procedure to fit the replacement veneer.

0043b

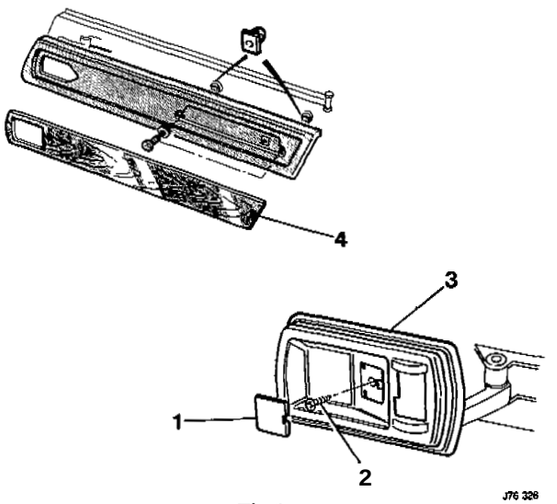


Fig 1

REAR DOOR UPPER TRIM PAD

RENEW **76.34.05**

Open the door.
Remove the rear door trim pad veneer panel 76.47.12.
Remove the upper trim panel securing screws, lift the panel to remove from the door mounting and remove the panel.
Remove the top channel securing nuts and remove the top channel assembly.
Discard the upper trim pad.
Reverse the removal procedure to refit the replacement panel.

0025b

REAR DOOR WAIST RAIL MOULDING

RENEW **76.43.05**

Open the door.
Carefully unclip the moulding (1 Fig 2) from the door flange.
Discard the moulding.
Using a suitable block to protect the moulding carefully fit the replacement moulding to the door.
Close the door.

0034b

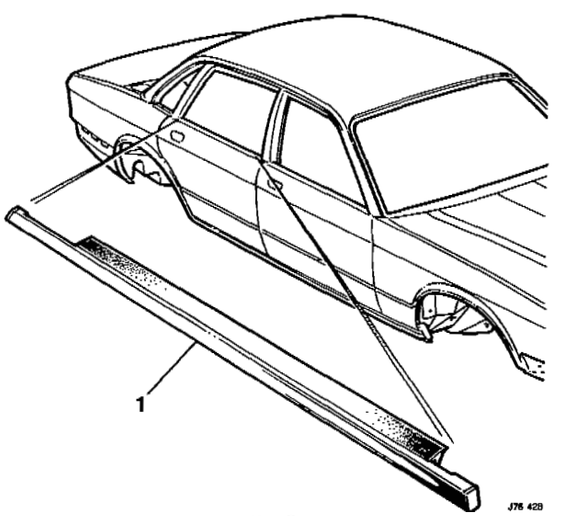


fig 2

REAR DOOR LOCK STRIKER

RENEW **76.37.24**

Open the door and slacken the pin (1 Fig 1), remove the pin from the 'D' post and collect the washer.
Reverse the removal procedure to fit a replacement striker pin.

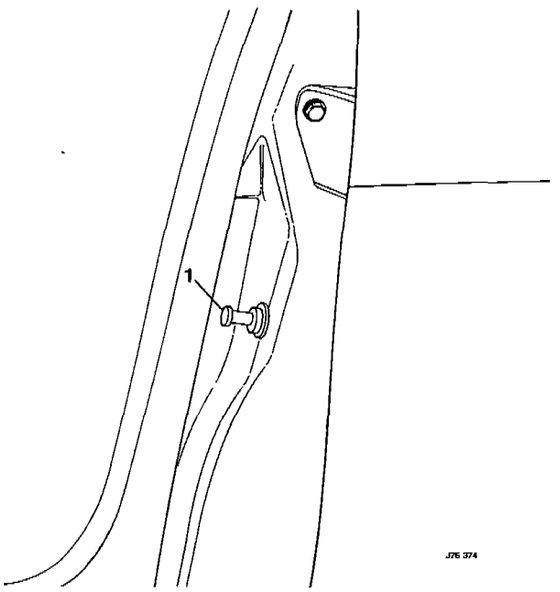


Fig 1

DATA

TORQUE FIGURES

Striker pin to 'D' post 24-30Nm

SPANNER SIZES

17mm

1669B/61

REAR DOOR SEAL

RENEW **76.40.02**

Open the door.
Remove the end panel finishers and pull the top finisher clear of the tread plate.
Remove the five tread plate securing screws and remove the tread plate.
Remove the seal (Fig 2) and clean the channel.
Apply Kent clear sealer to the ' C channel butt joints and Solumin to the section of the seal above the sill section.
Position the replacement seal and locate in the upper corners, secure with tape and using soft soap Seat **the** door seal in the channel.
Remove the tape and slide the front lower edge and corner of the seal into position.
Clean off all soft soap and refit the sill tread plate.

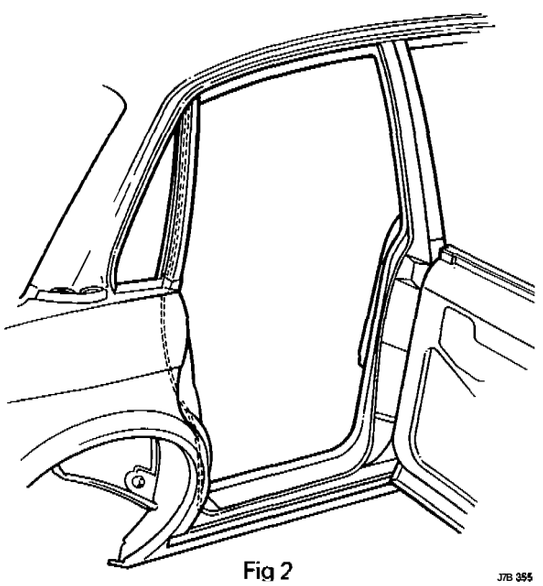


Fig 2

DATA

OILS/SEALANTS/LUBRICANTS

Three 'C' channel butt joints Kent clear sealer
Seal** (above **sill section) Solumin

1669B/70

REAR BUMPER ASSEMBLY

RENEW 76.22.15

Remove both rear fog lamp assemblies and rear side marker lamps (where fitted).
Remove the bumper securing bolts and collect the spacers and remove the rear bumper assembly (Fig 1).
Guide the replacement bumper onto the guides at the sides of the vehicle and fit the securing bolts.
Tighten the bolts and refit the rear fog and marker lamps (where fitted).

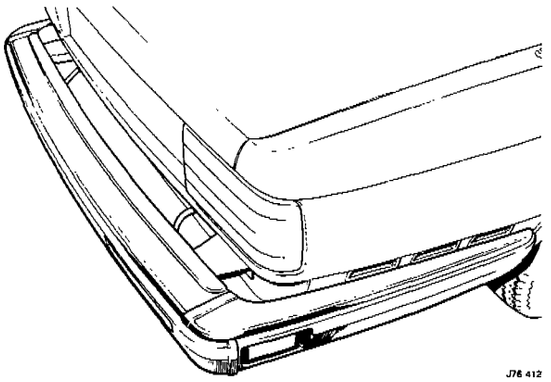


Fig 1

DATA

TORQUE FIGURES

Bumper mounting brackets to body (Non Federal) ***23-27Nm***
Bumper mounting struts to body (Federal) ***23-27Nm***
Bumper ***to*** *bumper bracket (Non Federal)* ***40-50Nm***
Bumper to body inner (Federal) ***23-27Nm***
Bumper to ***fixings*** *bumper beam (Federal)* ***39-50Nm***
Bumper to body inner (Non Federal) ***23-27Nm***
Bumper to ***fixings bumper*** *beam (Non Federal)* ***39-50Nm***
Guide ***block*** *to mounting bracket* ***3.5-4.75Nm***
Mounting bracket ***guide*** *block* ***to*** *body* ***7.5-10Nm***

SPANNER SIZES

8mm
10mm
13mm
17mm
19mm

No *20 Torx*

0375b

REAR BUMPER ASSEMBLY

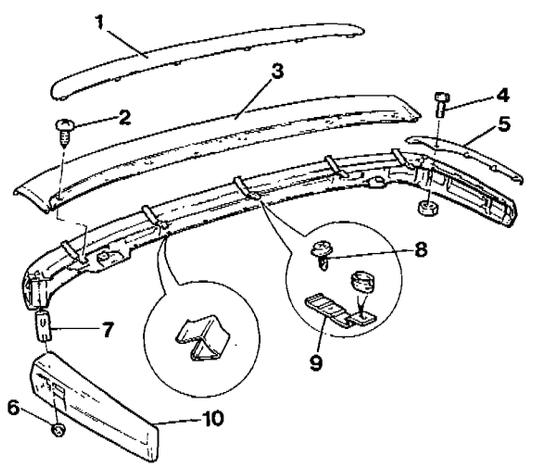


Fig 2

OVERHAUL 76.22.18

Remove the rear fog guard and marker lamps (where fitted).
Remove the rear bumper securing bolts **and** remove the rear bumper assembly.
Remove the central plastic finisher (1 Fig 2), remove the centre blade rubber securing screws (2 Fig 2) **and** remove the rubber.
Remove the quarter bumper securing nuts and bolts (6 Fig 2) and remove the rear quarter bumper (10 Fig 2).

Remove the bumper cover blade retaining clip securing screws and remove the clips.
Reverse the removal procedure to reassemble ensuring that any damged components are replaced.
Refit the bumper assembly to the vehicle.

DATA

TORQUE FIGURES

Bumper front blade to beam **5-7Nm**
Bumper mounting brackets to body (Non Federal) **23-27Nm**
Bumper mounting struts to body (Federal) **23-27Nm**
Bumper side to flexible mounting **block 5-7Nm**
Bumper side blades to beam **5-7Nm**
Bumper to bumper bracket (Non Federal) **40-50Nm**
Bumper to body inner (Federal) **23-27Nm**
Bumper to fixings bumper beam (Federal) **39-50Nm**
Bumper to body inner (Non Federal) **23-27Nm**
Bumper to fixings bumper beam (Non Federal) **39-50Nm**
Flexible mounting block to beam **5-7Nm**
Guide black to mounting bracket **3.5-4.75Nm**
Mounting bracket guide block to body **7.5-10Nm**

SPANNER SIZES

8mm
10mm
13mm
17mm
19mm
No 20 Torx

0377b

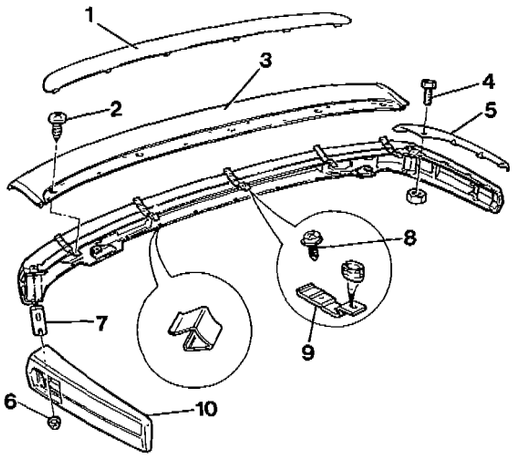


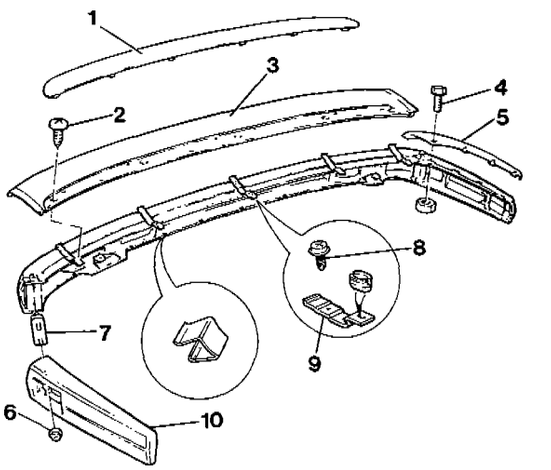
Fig 1

REAR QUARTER BUMPER

RENEW 76.22.17

Open the boot.
Move the rear boot carpet for access to the rear fog guard lamp harness and position approximately 3" of harness 'slack' through the grommet for each lamp.
Remove the beam securing bolts and spacers and carefully move the beam assembly rearwards for access to the rear quarter bumper mountings.
Remove the reflector from the quarter bumper.

Remove the nuts (Fig 1) securing the bumper (Fig 1) to the mounting rubber.
Carefully reposition the quarter bumper from the studs and remove the quarter bumper assembly.
Reposition the beam onto the strut and remove the quarter blade to quarter bumper securing nuts and bolts.
Remove the blade from the bumper and place aside.
Reverse the removal procedure to refit the replacement bumper.



J76 350

Fig 1

DATA

TORQUE FIGURES

Bumper beam to bumper bracket (Non Federal) ***40-50Nm***
Bumper beam ***to*** *bumper strut (Federal)* ***39-50Nm***
Bumper quarter blade to quarter bumper ***5-7Nm***
Bumper side to flexible mounting block ***5-7Nm***

SPANNER SIZES

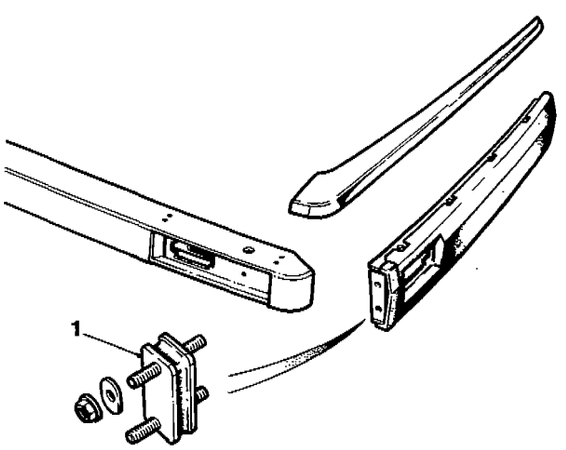
8mm
10mm
19mm

1669B/63

REAR QUARTER BUMPER MOUNTING RUBBER

RENEW **76.22.21**

Open the boot.
Remove the rear quarter bumper 76.22.17.
Remove the nuts securing the mounting rubber (1 Fig 2) to the beam and remove the mounting rubber.
Reverse the removal procedure to refit the replacement rubber.



J76 421

Fig 2

DATA

TORQUE FIGURES

Bumper beam ***to*** *bumper bracket (Non Federal)* ***40-50Nm***
Bumper beam ***to*** *bumper strut (Federal)* ***39-50Nm***
Bumper quarter blade to quarter bumper ***5-7Nm***
Bumper side ***to*** *flexible mounting block* ***5-7Nm***

SPANNER SIZES

8mm
10mm
19mm

REAR QUARTER BUMPER LOCATING BRACKET

RENEW 76.22.22

Open the boot.
Remove the rear quarter bumper 76.22.17.
Slacken and remove the screws securing the locating bracket (1 Fig 1) to the body.
Remove the locating bracket.
Reverse the removal procedure to refit the replacement bracket.

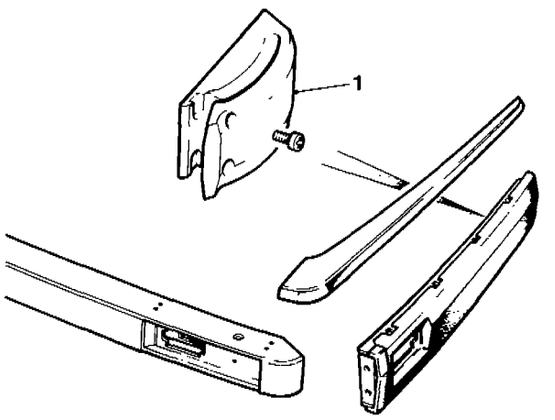


Fig 1

DATA

TORQUE FIGURES

Bumper beam to bumper bracket (Non Federal) ***40-50Nm***
Bumper beam to bumper strut (Federal) ***39-50Nm***
Bumper quarter blade to quarter bumper ***5-7Nm***
Bumper side to flexible mounting ***block 5-7Nm***

SPANNER SIZES

8mm
10mm
19mm

1669B/67

REAR QUARTER BUMPER BLADE

RENEW *76.22.75*

Open the boot.
Move the rear boot carpet for access to **the** rear fog guard lamp harness and position approximately 3" of harness **'slack** through the grommet **for** each lamp.
Remove the beam securing bolts and spacers and carefully move the beam assembly rearwards for access to the rear quarter bumper mountings.
Remove the reflector from the quarter bumper.
Remove the nuts securing the bumper to the mounting rubber.
Carefully reposition the quarter bumper from the studs and remove the quarter bumper assembly.
Reposition the beam .onto the strut and remove the quarter blade to quarter bumper securing nuts and bolts (1 Fig 2).
Remove the blade from the bumper and place aside (2 Fig 2).
Reverse the removal procedure to refit the replacement bumper blade.

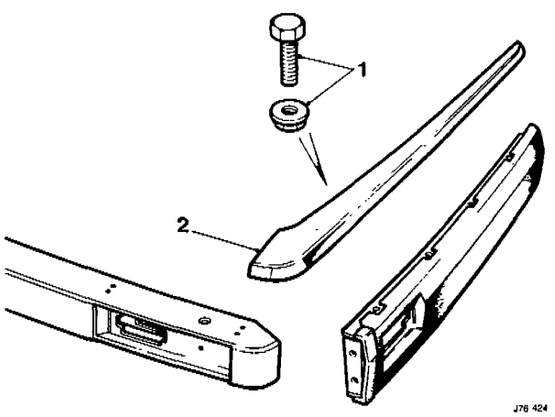


Fig 2

DATA

TORQUE FIGURES

Bumper beam to bumper bracket (Non Federal) ***40-50Nm***
Bumper beam to bumper strut (Federal) ***39-50Nm***
Bumper quarter blade to quarter bumper ***5-7Nm***
Bumper side to flexible mounting block ***5-7Nm***

SPANNER SIZES

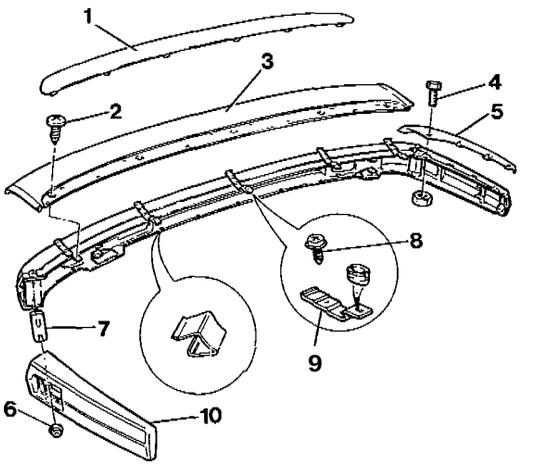
8mm
10mm
19mm

1669B/69

REAR BUMPER CENTRE BLADE

RENEW **76.22.12**

Prise off the black plastic trim finisher (1 Fig 1), remove the five screws (2 Fig 1) securing the blade (3 Fig 1), release the blade from the securing clips and remove the bumper blade.
Fit the replacement centre blade to the retaining clips, fit and tighten the five securing screws and refit the trim finisher.



J78 350

Fig 1

DATA

TORQUE FIGURES

Bumper mounting brackets ***to*** *body (Non Federal)* ***23-27Nm***
Bumper mounting struts to body (Federal) ***23-27Nm***
Bumper to bumper bracket (Non Federal) ***40-50Nm***
Bumper to ***body*** *inner (Federal)* ***23-27Nm***
Bumper to fixings bumper beam (Federal) ***39-50Nm***
Bumper to body inner (Non Federal) ***23-27Nm***
Bumper to fixings bumper beam (Non Federal) ***39-50Nm***
Guide block ***to*** *mounting bracket* ***3.5-4.75Nm***
Mounting bracket guide block to body ***7.5-10Nm***

SPANNER SIZES

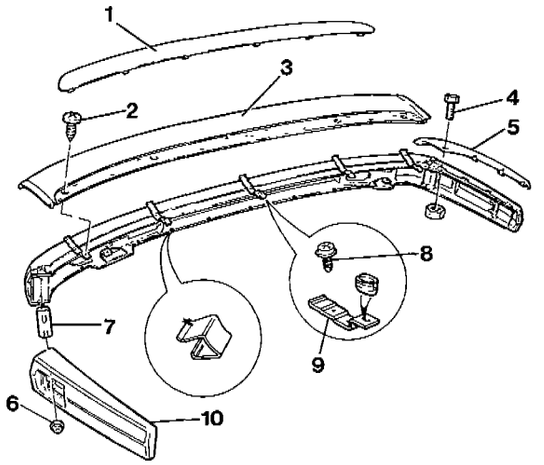
8mm
10mm
13mm
17mm
19mm
No *20 Torx*

0374b

REAR BUMPER CENTRE BLADETRIM FINISHER

RENEW **76.22.14**

Open the boot.
Move the carpet to gain access to the rear fog guard lamp harnesses.
Reposition approximately 3" of slack through the grommets for each *fog* guard lamp.
Remove the bolts securing the rear beam.
Remove the spacers.
Carefully position the beam assembly rearwards to gain access to the trim finisher.
Unclip and remove the trim finisher **(1** Fig **1)** taking care not to dislodge the beam assembly from the struts.
Reverse the removal procedure to refit the trim finisher.



J76 350

Fig **1**

DATA

TORQUE FIGURES

Bumper mounting brackets to ***body*** *(Non Federal)* ***23-27Nm***
Bumper mounting struts ***to*** *body (Federal)* ***23-27Nm***
Bumper ***to*** *bumper bracket* ***(Non*** *Federal)* ***40-50Nm***
Bumper ***to*** *bumper strut (Federal)* ***40-50Nm***

SPANNER SIZES

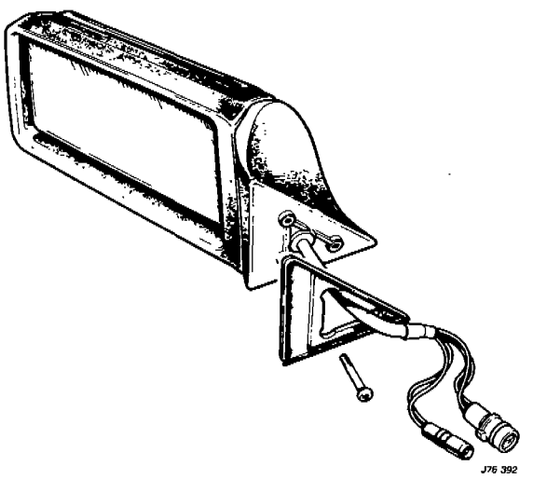
8mm
1Omm
13mm
19mm

1669B/78

EXTERIOR MIRROR

RENEW **76.10.52**

Open the front door.
Remove the door trim pad veneer panel and **the** upper trim pad.
Remove the screws securing the mirror attachment plate and remove the plate (Fig 2).
Cut the ratchet strap securing the **mirror** harness.
Disconnect the mirror harness **block** connectors, remove the mirror securing screws and remove the mirror assembly.
Reverse the removal procedure to refit.



J76 392

Fig 2

0003b

GUTTER FINISHER

RENEW **76.43.11**

Open the front and rear doors (one side), remove the four screws and remove the B post capping.
Remove the drip moulding securing screws (1 Fig 1) and remove the moulding to six light trim finisher and remove the drip moulding (2 Fig 1).
Fit the replacement drip moulding into position and align to the body fixing holes.
Fit and tighten the fixing screws.
Fit the six light to moulding finisher, position and tighten the four screws.
Close the doors.

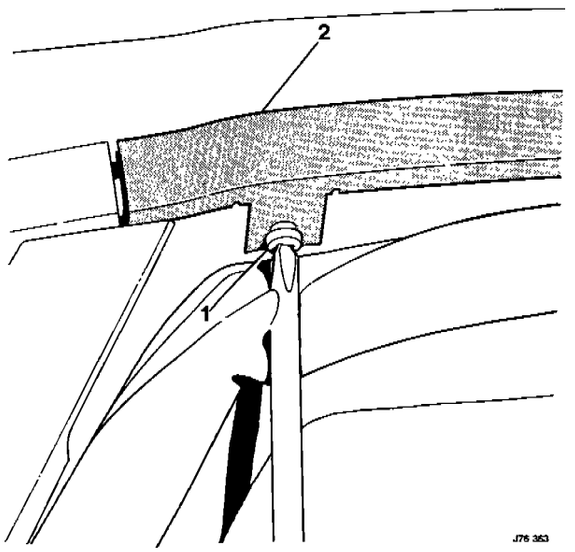


Fig 1

DATA

TORQUE FIGURES

Drip** moulding **to** body **2-4Nm

0398b

NUMBER PLATETRIM (WHERE FITTED)

RENEW **76.43.22**

Open the boot lid, remove the three self tapping screws and prise the trim , starting at the upper side edge and work round and release the eight locating plugs from the lower boot panel and remove the trim.
Reverse the removal procedure to refit the trim after new sealant has been applied to the trim.

0361b

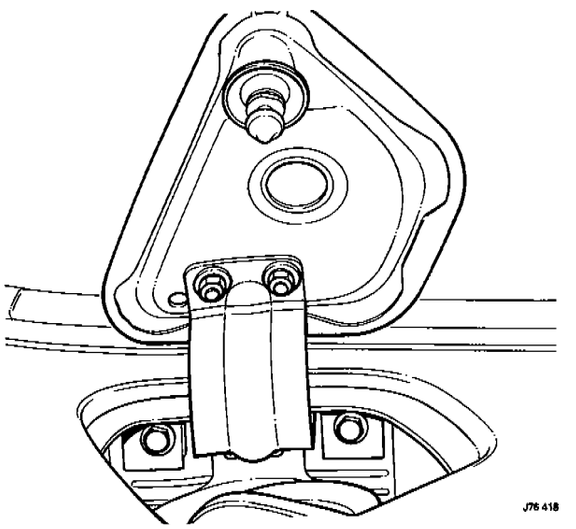


Fig 2

PETROL FILLER FLAP

RENEW **76.10.25**

Depress flap and list as shown and lift the corner. Open flap and remove the two nuts, spring and plain washers and remove the flap (Fig 2).
Slacken the locknut securing the locking pin and remove the locking pin.
Reverse the removal procedure to refit the flap ensuring that the locking pin is adjusted to ensure that the flap shuts flush with the wing top.

DATA

TORQUE FIGURES

Latch fixing nut to latching bolt ***2-3Nm***

SPANNER SIZES

8mm
10mm

OILS/SEALANTS LUBRICANTS

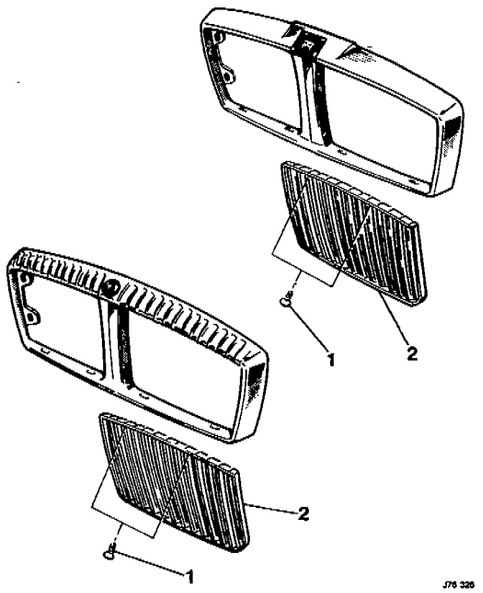
Filler flap hinge leaf ***Shell Retinax 'A'***

0363b

RADIATOR GRILLE VEHICLE SET

RENEW ***76.55.07***

Remove the two screws **(1 Fig 1)** securing each front grille (2 Fig **1**) and remove the grille.
Refit the replacement grilles by engaging the lower tag of each grille into its locating slot and securing at the top with the screw.



J76 326

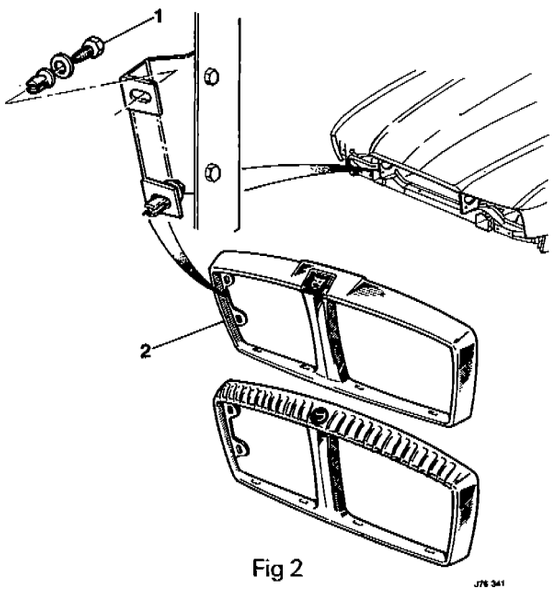
Fig 1

0383b

RADIATOR GRILLE SURROUND

RENEW ***76.55.15***

Remove the two front grilles and remove the two bolts **(1** Fig 2) each side securing the grille support brackets to the body.
Remove the grille assembly and remove the grille support brackets and the four thread inserts.
Fit the brackets and thread inserts to the replacement grille surround and secure the surround to the body with the four bolts.
Refit the two front grilles.



J76 341

Fig 2

DATA

SPANNER SIZES

10rnrn

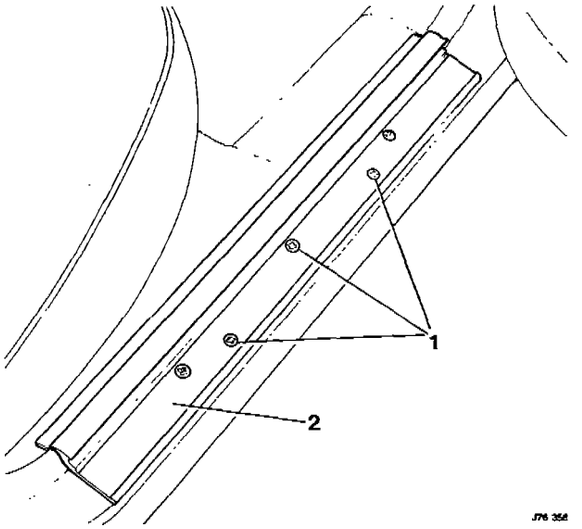
0382b

SILLTREAD PLATE – REAR

RENEW *76.76.02*

Open the door.
Remove the end panel finishers and pull the top finisher clear of the tread plate.
Remove the five tread plate securing screws (1 Fig 1) and remove the tread plate (2 Fig 1).
Fit the replacement tread plate into position and secure with the fixing screws.
fit the new sill finisher and push in the end panel finishers.
Close the door.

1669B/56



J76 356

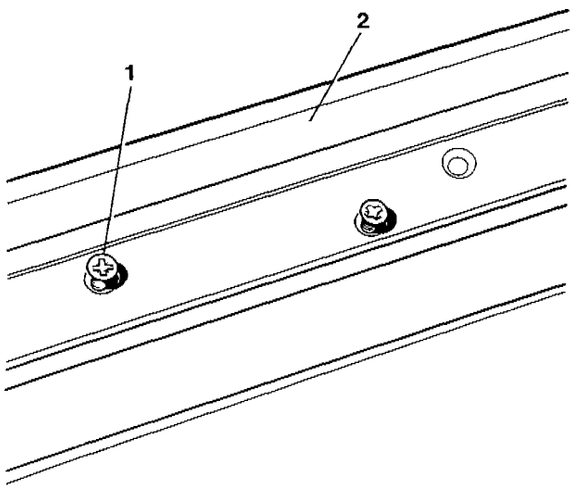
Fig 1

SILL TREAD PLATE–FRONT

RENEW **76.76.01**

Open the door.
Remove the end panel finishers and pull the top finisher clear of the tread plate.
Remove the five tread plate securing screws (1 Fig 2) and remove the tread plate (2 Fig 2).
Fit the replacement tread plate into position and secure with the fixing screws.
Fit the new sill finisher and push in the end panel finishers.
Close the door.

0399b



J76 362

Fig 2

SLIDING ROOF ASSEMBLY

RENEW **76.82.01**

Open the doors.
Remove the sliding roof panel 76.82.05
Release the clip securing the interior lamp.
Displace the panel assembly from its mounting position and disconnect the block connectors.
Place the panel to one side.
Remove the cantrail crash roll left and right hand 76.13.10.
Remove the headlining rear finisher 76.64.12.
Remove the rear quarter upper trim pad right hand 76.13.43.
Remove the rear quarter upper trim pad left hand 76.13.43.
Remove the sun visor vehicle set 76.10.17.
Remove the sliding roof flange finisher 76.82.23.
Remove the headlining to sliding roof aperture securing clips (1 Fig 3).

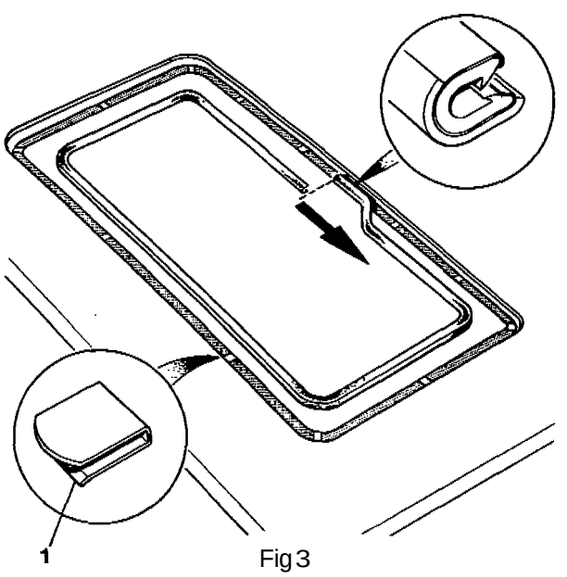


Fig 3

J76 357

Recline the seats fully for access and release the left hand rear headlining clip (1 Fig 2), reposition the headlining onto the rear parcel shelf for access.
Disconnect the sliding roof motor block connector.
Cut and remove the drain tube to roof assembly securing ratchet straps.
Disconnect the drain tubes from the sliding roof assembly.
Remove the bolts securing the support bracket (1 Fig **1**) to the sliding roof.
Remove the bolts securing the left and right hand support bracket (Fig **1**) to the roof.
Remove the right hand support brackets and lower the roof assembly from the left hand support brackets and remove from the vehicle via the front passenger door.
Remove the spacers and place the roof aside.
Reverse the removal procedure ensuring that prior to final tightening *of* the securing bolts that the roof is centralised with an even 4mm gap all round the aperture.

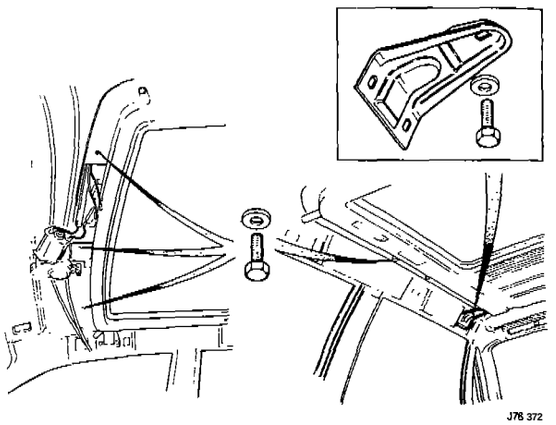


Fig 1

DATA

TORQUE FIGURES

Outer seal retainer ***2-3Nm***
Plate and lifting block to bracket ***2.3-3.4Nm***

SPANNER SIZES

13mm

0080b

SLIDING ROOF FLANGE FINISHER

RENEW **76.82.23**

Open the door.
Open the sliding **roof.**
Carefully remove the sliding roof aperture finisher (Fig 2) from the aperture ensuring that the headlining trim edges are not damaged.
Reverse the removal procedure to refit the finisher.

0085b

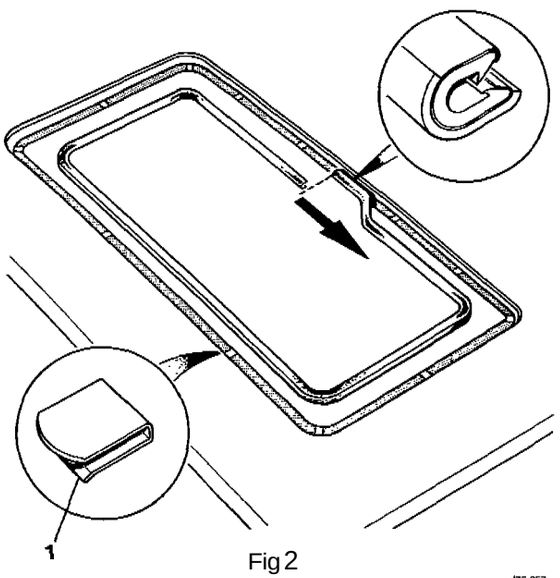


Fig 2

SLIDING ROOF MOTOR DRIVE GEAR

RENEW **76.82.44**

Open the doors.
Remove the sliding roof flange finisher 76.82.23.
Remove the sun visor vehicle set 76.10.17.
Remove the cantrail crash roll left and right hand 76.13.10.
Remove the sliding roof motor 86.76.01
Remove the drive gear from the sliding roof motor.
Reverse the removal procedure to fit the replacement gear ensuring that prior to assembly the gear is coated with grease.

0090b

SLIDING ROOF PANEL

RENEW ***76.82.05***

Open the door.
Open the sliding roof.
Remove the sliding roof panel securing screws and partially close the roof.
Remove the sliding roof panel assembly.
Remove the lifting **block** securing nuts and screws and (1 Fig 2) remove the lifting **blocks** (2 Fig 2) and plates (3 Fig 2).
Remove the screws **(1** Fig 1) and drill out the 'pop' rivets (2 Fig 1) securing the roof panel seal front and rear retaining plate.
Remove the retaining plates.
Remove the seal.
Discard the roof panel.
Reverse the removal procedure ensuring that prior to final tightening of the securing screws that the roof *is* centralised with an 'even' 4mm **gap** all round the aperture.

0081b

SLIDING ROOF PANEL LIFTING BLOCK

RENEW **76.82.27**

Open the door.
Open the sliding roof.
Remove the nuts (1 Fig 2) securing the lifting **blocks** (2 Fig 2) and remove.
Reverse the removal procedure to refit the replacement lifting block ensuring that prior to final tightening of the securing nuts, the roof panel alignment is checked.

0086b

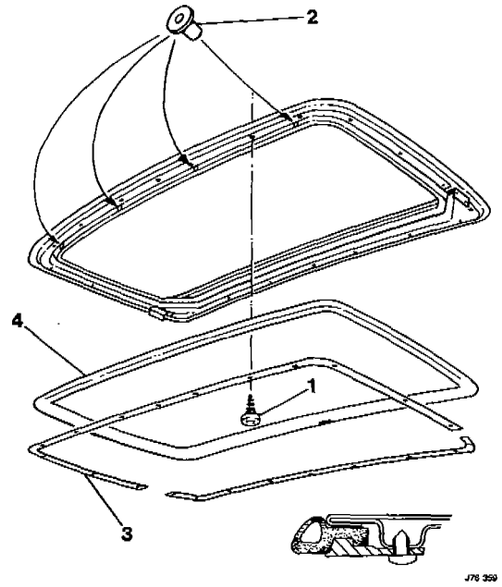


Fig 1

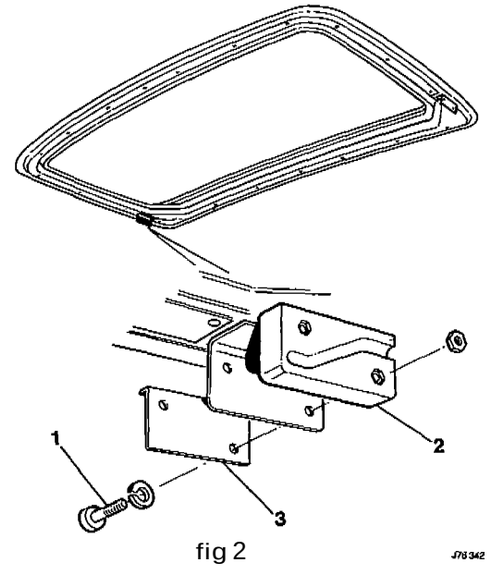


fig 2

SLIDING ROOF PANEL LIFTING BLOCK VEHICLE SET

ADJUST *76.82.38*

Open the door.
Open the sliding roof.
Slacken the nuts (Fig 1) securing the lifting blocks (2 Fig 1) and reposition as required.
Tighten the securing nuts and carefully slide the panel shut to check the alignment with the roof.

0087b

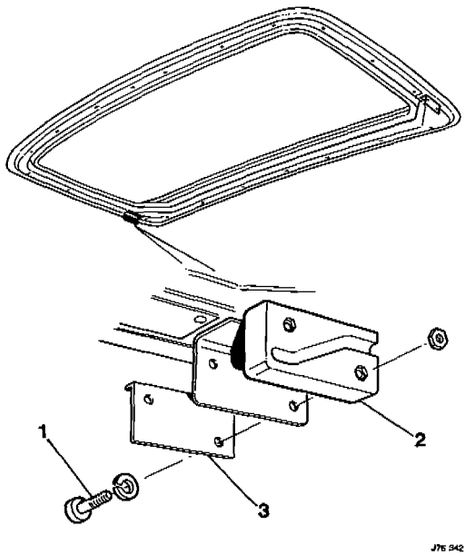


Fig 1

SLIDING ROOF PANEL SEAL

RENEW **76.82.15**

Open the door.
Open the sliding roof.
Remove the sliding roof panel securing screws and partially close the roof.
Remove the sliding roof panel assembly.
Remove the lifting block securing nuts and screws and remove the lifting blocks and plates.
Remove the screws (1 Fig 2) and drill out the 'pop' rivits (Fig 2) securing the roof panel seal front and rear retaining plate.
Remove the retaining plates (3 Fig 2).
Remove the seal (4 Fig 2).
Discard the roof panel.
Reverse the removal procedure ensuring that prior to final tightening of the securing screws that the roof is centralised with an 'even' 4mm gap all round the aperture.

0083b

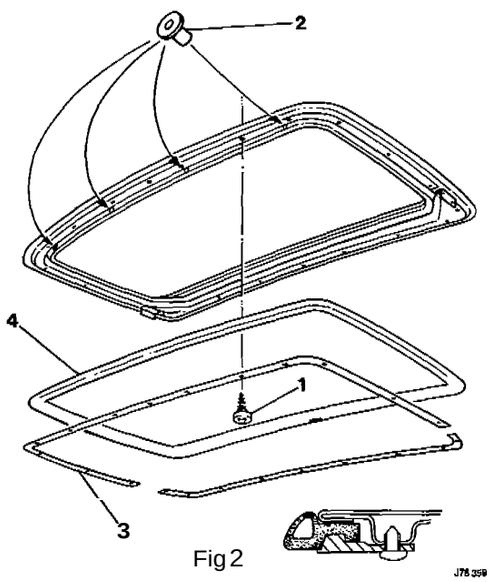


Fig 2

SLIDING ROOF PANEL TRIM ASSEMBLY

RENEW **76.82.19**

Open the door.
Remove the sliding roof panel 76.82.05
Fully close the sliding roof, remove the trim panel securing clips, partially open the sliding roof, remove the screws securing the front bridge plate and collect the bridge plate.
Remove the trim panel and clean the rubbers.
Reverse the removal procedure to fit the replacement trim.

SLIDING ROOF PANEL WIND DEFLECTOR

ADJUST **76.82.39**

Open the door.
Open the sliding roof.
Slacken the screws securing the wind deflector (Fig 1), adjust as required and tighten the deflector securing screws.
Carefully slide the panel shut to check the alignment with the roof.

0089b

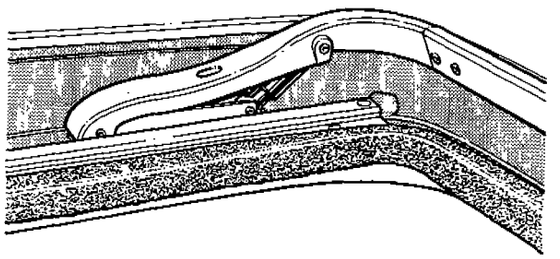

J76 519

Fig 1

SLIDING ROOF RACK

RENEW **76.82.42**

Open the doors.
Remove the sliding roof panel 76.82.05
Remove the sliding roof flange finisher 76.82.23.
Remove the sun visor vehicle set 76.10.17.
Remove the cantrail crash roll left and right hand 76.13.10.
Remove the sliding roof motor 86.76.01
Release the interior lamp **panel** securing clip and release the panel assembly from its mounted position.
Disconnect the block connectors (Fig 2) and place the panel aside.
Remove the sliding roof motor 86.76.01
Remove the tape and cut the ratchet straps securing the rack tubes together and taking care to ensure that the headlining is not soiled by the rack, remove the rack end **tube** sections.
Manually slide the roof panel rearwards and remove the relevent mounting bracket securing **bolts.**
Remove the bracket.
Remove the screws securing the rack tube clamp to the sliding roof, manually close the roof and remove the rack to roof panel carrier securing nut.
Displace the rack tube assembly from its guide, open up and reposition the tube clamp over the rear tube and rack bracket.
Holding the rear tube in position, disconnect the front rack tube from the rear rack tube.
Release the rack from the rear tube and carefully remove the rack.
Grease the replacement rack, fit the rack to the front rack tube, reposition the rack into the rear rack tube approximately 12 in. ensuring that the clamp is not displaced along the tube.

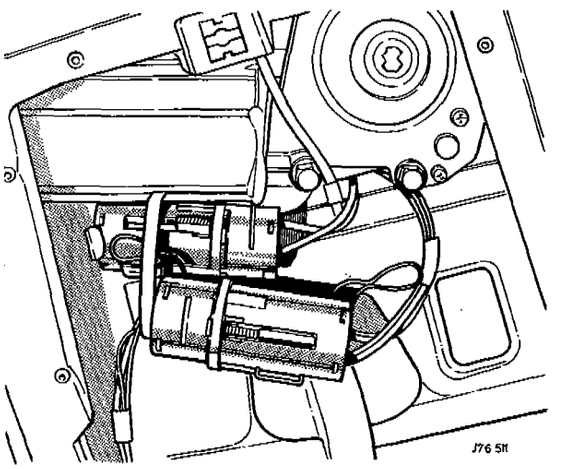

J76 511

Fig 2

Reposition the front rack tube and connect to the rear rack tube, ensure that the rack tube to sliding roof assembly rubber is correctly positioned.
Position the clamp over the union and connect the rack to the carrier.
Tighten the rack securing nut and manually slide the roof fully rearwards.
Position the rack tube into the guide, close the clamp and align the mounting bracket, fit and tighten the clamp securing screws.
Position the rack tube end sections and secure the tube with ratchet straps and tape.
Position the rack tubes for fitting the motor, manually close the roof, ensure that the carriers are fully forward, refit the roof motor and reverse the remaining removal procedure to refit.

0091b

SLIDING ROOF RACK VEHICLE SET

RENEW **76.82.43**

Open the doors.
Remove the sliding roof panel 76.82.05
Remove the sliding roof flange finisher 76.82.23.
Remove the sun visor vehicle set 76.10.17.
Remove the cantrail crash roll left and right hand 76.13.10.
Remove the sliding roof motor 86.76.01
Release the interior lamp panel securing clip and release the panel assembly from its mounted position.
Disconnect the block connectors (Fig 1) and place the panel aside.
Remove the sliding roof motor 86.76.01
Remove the tape and cut the ratchet straps securing the rack tubes together and taking care to ensure that the headlining is not soiled by the rack, remove the rack end tube sections.
Manually slide the roof panel rearwards and remove the relevent mounting bracket securing bolts.
Remove the bracket.
Remove the screws securing the rack tube clamp to the sliding roof, repeat the procedure for the second side, manually close the roof and remove the rack to roof panel carrier securing nut.
Displace the rack tube assembly from its guide, open up and reposition the tube clamp over the rear tube and rack bracket.
Holding the rear tube in position, disconnect the front rack tube from the rear rack tube.

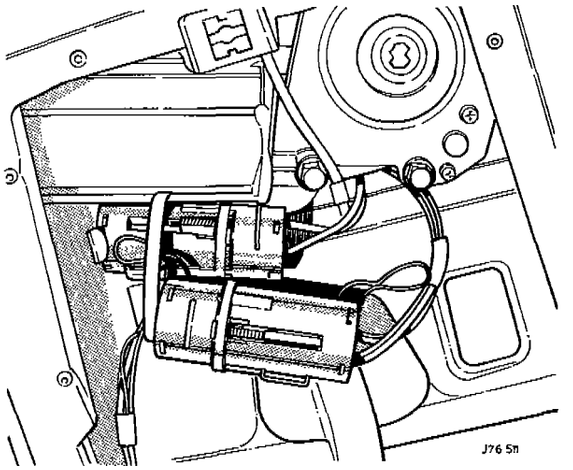


Fig 1

Release the rack from the rear tube and carefully remove the rack.
Repeat the procedure for the second side.
Grease the replacement racks, fit the rack to the front rack tube, reposition the rack into the rear rack tube approximately 12 in. ensuring that the clamp is not displaced along the tube.
Reposition the front rack tube and connect to the rear rack tube, ensure that the rack tube to sliding *roof* assembly rubber is correctly positioned.
Position the clamp over the union and connect the rack to the carrier.
Tighten the rack securing nut and repeat the procedure for the second side.
Manually slide the roof fully rearwards.
Position the rack tube into the guide, close the clamp and align the mounting bracket, fit and tighten the clamp securing screws.
Repeat the procedure for the second side.
Position the rack tube end sections and secure the tubes with ratchet straps and tape.
Position the rack tubes for fitting the motor, manually close the roof, ensure that the carriers are fully forward, refit the roof motor and reverse the remaining removal procedure to refit.

0092b

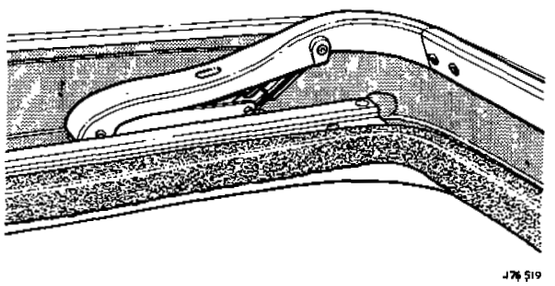


Fig 1

SLIDING ROOF WIND DEFLECTOR

RENEW ***76.82.07***

Open the door.
Open the sliding roof.
Remove the screws securing the wind deflector (Fig 1) and remove the deflector assembly.
Remove and discard the deflector gaskets.
Place the deflector to one side.
Reverse the removal procedure to refit the deflector ensuring that prior to tightening of the securing screws the sliding roof is carefully closed to check the alignment of the deflector.

0082b

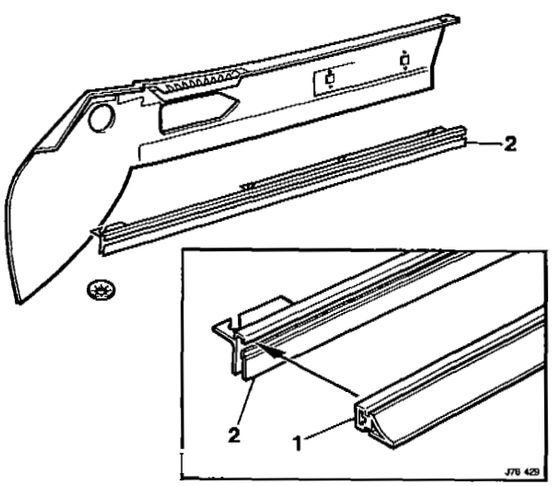


Fig 2

WEATHER STRIP

RENEW **76.43.22**

Remove the door upper trim pad and slide the weather strip (**1** Fig 2) from the channel (2 **Fig** 2).
Reverse the removal procedure to refit.

0357b

WEATHER STRIP CHANNEL

RENEW **76.43.25**

Remove the door upper trim pad.
Remove the heater vent plenum chamber securing screws, and pull the chamber clear of upper trim, remove the nuts and springs washers (1 Fig 1) and remove the channel (2 Fig 1).
Reverse the removal procedure to refit the channel.

0356b

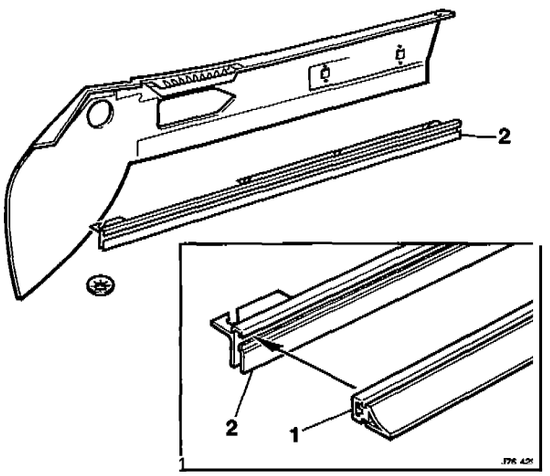


Fig 1

WINDSCREEN GLASS– LOWER FINISHER

RENEW **76.43.41**

Using a suitable implement under one corner of the seal, lift out of its aperture and peel back across the vehicle.
Coat the replacement seal with a liquid soap solution and starting at one end of the aperture, press the seal into position working across the vehicle, cut the seal to length and finally seat.

0395b

BOOT LID STRIKER

ADJUST **76.19.04**

Open the boot and remove the rear finisher screws and remove the finisher.
Slacken the stricker plate securing bolts (I Fig 2). adjust the striker to ensure the boot lid lines up with both rear wings, and tighten the securing bolts.
Fit the rear finisher and secure with the screws.
Close the boot.

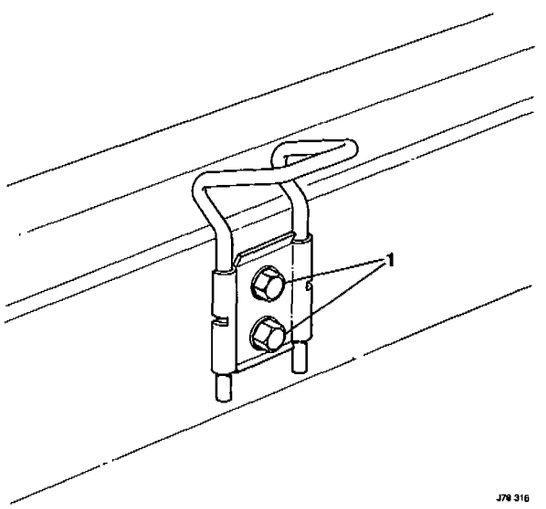


Fig 2

DATA

SPANNER SIZES

10mm
13mm

0381b

BOOT LID

RENEW **76.19.01**

Open the bonnet and disconnect the battery. open the boot, cut the clips securing the harness to the boot lid.
Disconnect the boot lamp and boot lock multi-plugs and disconnect the number plate lamp feed wires.
Remove the hinge to boot lid securing bolts (Fig 1), hold the boot open using a suitable prop.
Disconnect the gas struts from the boot lid pivots and remove the boot lid.
Remove the two number plate lamp units, two screws each, and the boot illumination lamp. Remove the boot lid lock and remove the boot lock finisher and collect the finisher gasket.
Glue the gasket to the boot lock finisher, fit the finisher to the boot lid and secure with the two plain washers and nuts.
Refit the number plate lamps and the boot illumination lamp, refit the boot lock mechanism. lift the boot lid back into position, and fit but do not tighten the securing bolts and connect the struts to the boot lid pivot bolts.
Carefully shut the boot to align with the rear wings, open the boot and tighten the four securing bolts.
Secure the harness to the boot lid with harness straps and boot lid clips.
Connect the boot lamp and lock multi-plugs and connect the number plate light feed wires.
Close the boot.
Reconnect the battery and close the bonnet.

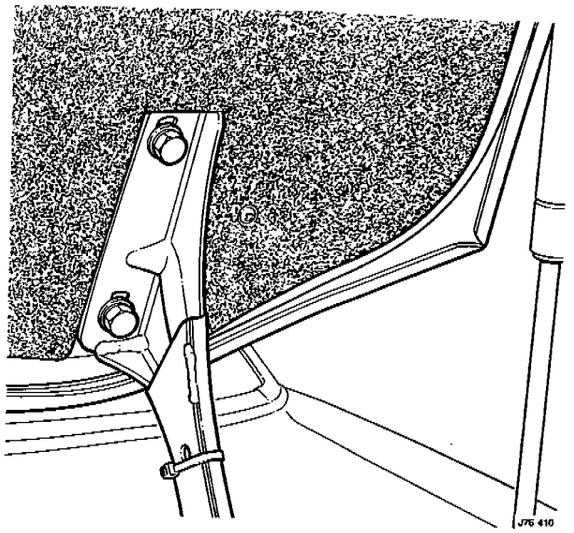


Fig 1

DATA

SPANNER SIZES

13mm

0367b

BOOT LID SEAL

RENEW **76.19.06**

Open the boot and remove the rear trim panel securing screws and remove the rear trim panel, and remove the seal from the boot flange.
Clean the seal mounting flange, fit the new seal in position (1 Fig 2), start at the lock striker and work back.

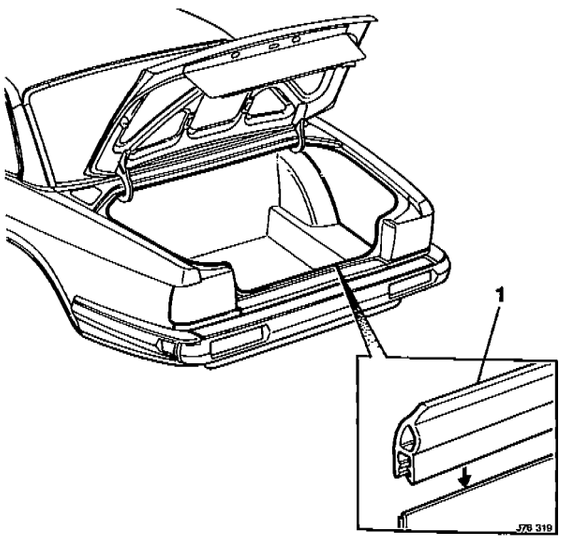


Fig 2

Cut the seal to the correct length and finally fit the seal to the flange.
Refit the rear trim finisher and secure with the screws.
Close the boot lid.

0366b

BOOT LID GAS STRUT

RENEW **76.19.27**

Open the boot.
Insert screwdriver and remove **the** strut (Fig **1**) from the top pivot and repeat the operation for the lower pivot.
Fit the strut to the lower pivot first to aid reassembly.
Reverse the removal procedure to refit the replacement strut.
NOTE: Change only one strut at once.

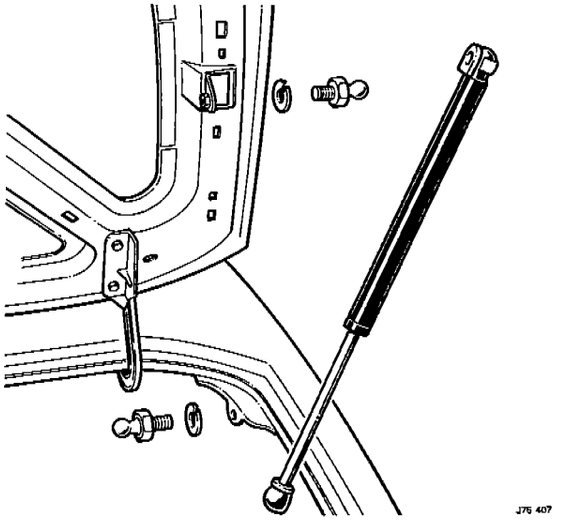


Fig **1**

0370b

BOOT LID STRUT PIVOT BOLTS

RENEW **76.00.00**

Open the boot.
Remove the strut **(Fig 1)**, slacken and remove the upper pivot bolt (Fig **1**), collect the **spring** washer (Fig **1)**.
Repeat the operation for the lower bolt.
Reverse the removal procedure to refit the bolts.
Close the boot lid.

DATA

0369b

BOOT LID LOCK MECHANISM

RENEW **76.19.25**

Open the boot, disconnect the operating rod from the remote linkage (spring clip).
Remove the **two** lock assembly securing bolts (2 Fig 2). remove the lock from the boot lid, disconnect the multi-plug (4 Fig 2) and remove the assembly from the vehicle.
Reverse the removal procedure to refit.

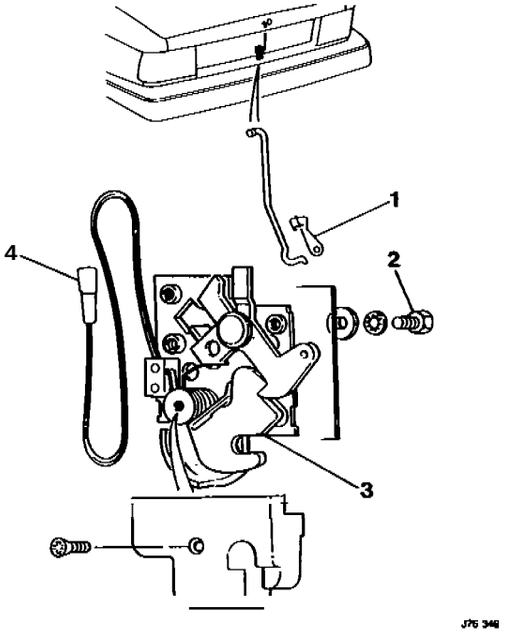


Fig 2

DATA

TORQUE FIGURES

Latch ***to boot*** *lid* ***7-10Nm***
Lock to boot *lid* ***5-7Nm***

DATA

SPANNER SIZES

8mm

1/2"AF

OILS/SEALANTS/LUBRICANTS

Lock moving parts Valvolene Tectyl 4008

0371b

BOOT LOCK RELEASE TRIGGER HANDLE

RENEW **76.19.15**

Remove the boot lock assembly, remove the roll pin and remove the lever.
Refit the replacement and reverse the removal procedure.

0373b

BOOT LOCK FINSIHER

RENEW **76.43.31**

Open the boot, disconnect the number plate lamp connections, and remove the lens assemblies.
Remove the two nuts (1 Fig 1) and plain washers securing the finisher, remove the finisher and gasket.
Glue the gasket (2 Fig 1) to the replacement finisher (3 Fig 1), fit to the boot lid and secure with the nuts and plain washer.
Refit the number plate lamp assemblies and connections.
Close the boot annd reconnect the battery.

DATA

TORQUE FIGURES

Finisher to boot lid 5-7Nm

SPANNER SIZES

8mm

0368b

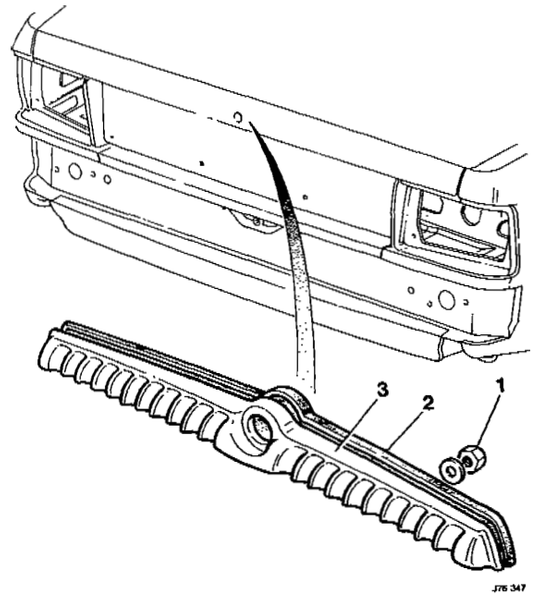


Fig 1

BOOT LID LOCK BARREL

RENEW **76.19.19**

Remove the boot'lock assembly, remove the four screws and separate the front plate from the operating assembly. Remove the locking pin and spring (1 Fig 1) and push the barrel (2 Fig 1) out from inside.
Reverse the procedure to refit the replacement, ensuring that the locating hole lines up with the holes in the housing.

0372b

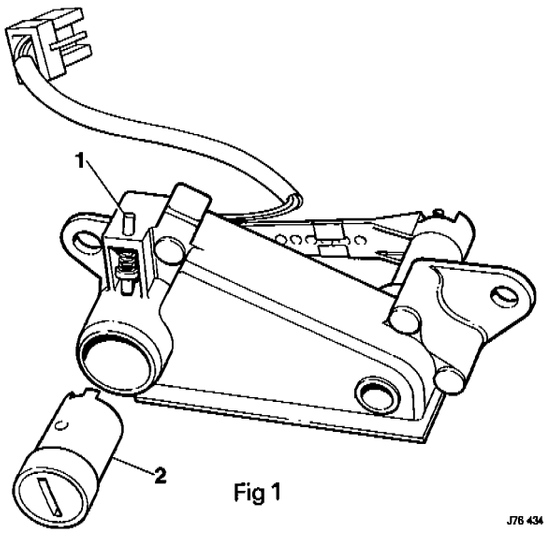


Fig 1

J76 434

BOOT LID LOCK STRIKER

RENEW **76.19.12**

Open the boot, remove the 4 screws (1 Fig 2) securing the boot trim and remove the trim and carpet.
Remove the 2 bolts (2 Fig 2) and spring washers and remove the striker plate (3 Fig 2).
Reverse the removal procedure and adjust the striker plate until the boot lid is flush wirh the rear wings when closed.

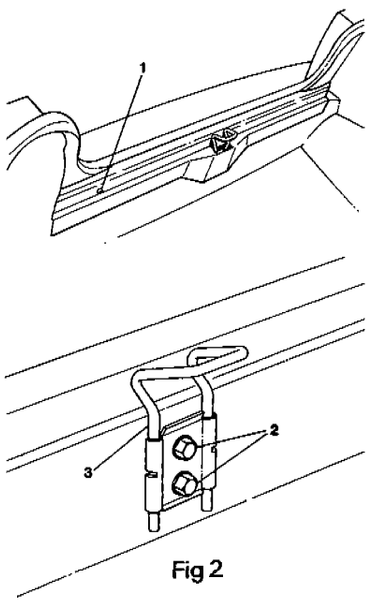


Fig 2

DATA

TORQUE FIGURES

Striker to rear trunk panel 7-10Nm

SPANNER SIZES

1Omm

0365b

BOOT VENTILATOR OUTLET

RENEW **80.15.66**

Remove the boot side trims and remove the 2 bolts and plain washers (4 Fig 3) securing the boxes (5 Fig 3) to the boot floor in either side.
Reverse the removal procedure to refit the boxes, ensuring that the two earth wire eyelets are refitted to each rear securing bolt and that the exhaust grommets are aligned with the apetures in the body side vents.

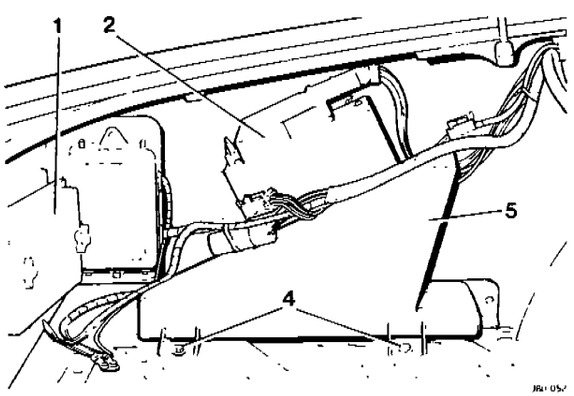


Fig 3

DATA

TORQUE FIGURES

Ventilator box to boot floor 6-8Nm

SPANNER SIZES

I Omm

0362b

BOOT LID HINGE VEHICLE SET

RENEW **76.19.28**

Open the boot, cut and remove the boot harness straps and move the harness away from the hinge, remove the upper hinge securing bolts (1 Fig 1), disconnect the boot illimination switch wire, (left hand side) remove the two lower hinge securing bolts and remove the hinge (2 Fig 1).
Reverse the removal procedure to refit the replacement hinge and repeat for the right hand boot hinge.
Adjust the alignment of the boot relative to the wings and tighten the securing bolts.

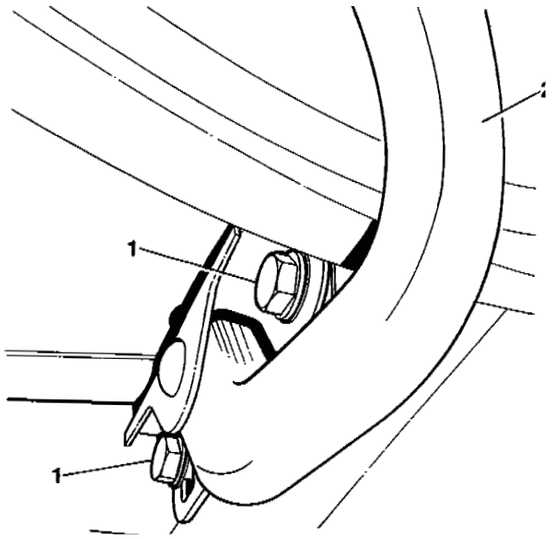


Fig 1

DATA

TORQUE FIGURES

SPANNER SIZES

13mm

0378b

BOOT LID SEALTREAD PLATE

RENEW **76.19.09**

Open the boot.
Slacken and remove the screws (1 Fig 2) securing the tread plate (2 Fig 2) to the body.
Remove the tread plate.
Reverse the removal procedure to refit the replacement tread plate.

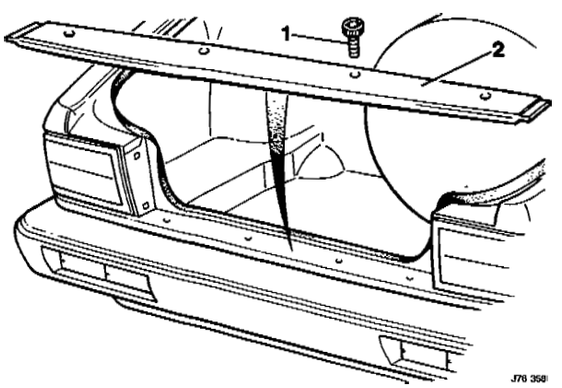


Fig 2

1669B/74

BOOT REAR LINER

RENEW **76.19.32**

Open the boot.
Peel back the floor carpet and sound insulation for access.
Remove the tread plate securing screws and remove the tread plate.
Remove the boot rear liner.
Reverse the procedure to fit the replacement liner.

1669B/74

BOOT FLOOR CARPET

RENEW **76.19.30**

Open the boot.
Move the spare wheel access flap and remove the bolt securing the spare wheel in position.
Lift out the spare wheel.
Remove the floor carpet (Fig 1).
Reverse the removal procedure to refit the replacement floor carpet.

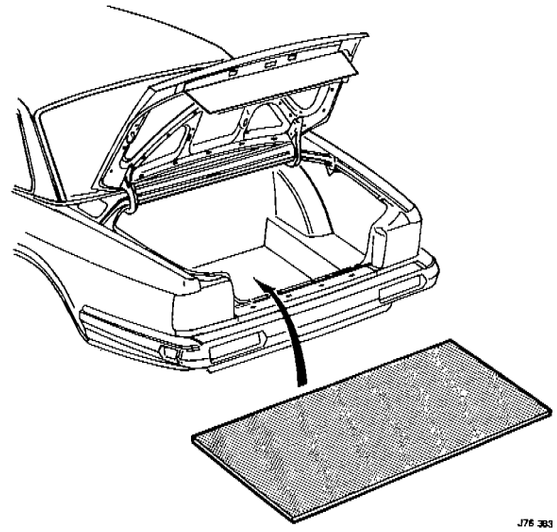


Fig 1

DATA

TORQUE FIGURES

Clamp screw clamp to spare wheel 13-16Nm

16698

BOOT FRONT LINER

RENEW **76.19.31**

Open the boot.
Move the spare wheel access flap and remove the bolt securing the spare wheel in position.
Lift out the spare wheel.
Remove the floor carpet.
Release the tension from the vehicle jack and remove the jack assembly.
Remove the front liner (Fig 2).
Reverse the removal procedure to refit the replacement front liner.

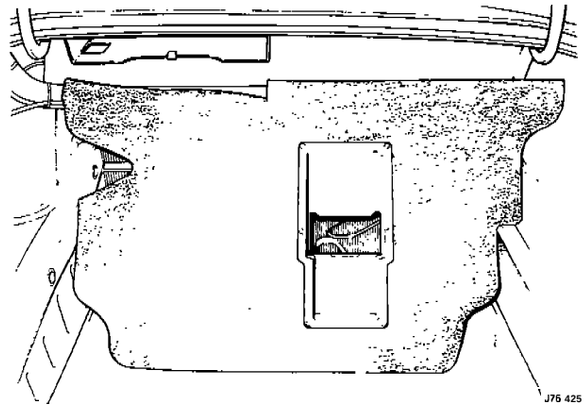


Fig 2

DATA

TORQUE FIGURES

Clamp screw clamp to spare wheel 13-16Nm
Jack to mounting bracket 7-14Nm

1669B/75

BOOT SIDE LINER-LEFT HAND

RENEW **76.19.22**

Open the boot.
Move the spare wheel access flap and remove the bolt securing the spare wheel in position.
Lift out the spare wheel.
Remove the floor carpet.
Release the tension from the vehicle jack and remove the jack assembly.
Remove the front liner (Fig 3).

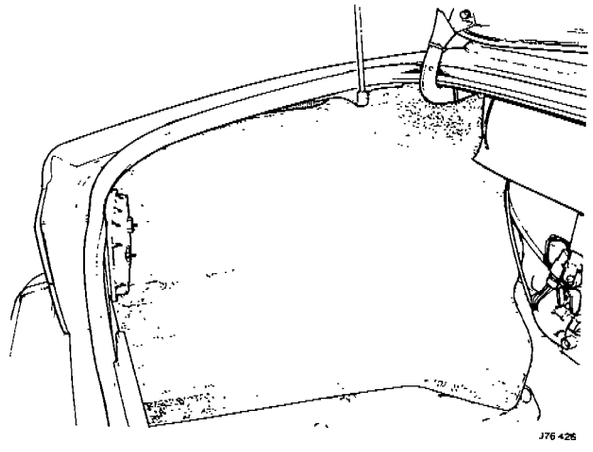


Fig 3

Remove the nuts securing the rear lamp assembly inner cover.
Remove the inner cover.
Remove the screw securing the upper portion of the side liner and remove the liner.
Reverse the removal procedure to refit the replacement side liner.

DATA

TORQUE FIGURES

Clamp screw clamp to spare wheel **13-16Nm**
Jack to mounting bracket **7-14Nm**

1669B/75

BOOT SIDE LINER-RIGHT HAND

RENEW **76.19.23**

Open the boot.
Move the spare wheel access flap and remove the bolt securing the spare wheel in position.
Lift out the spare wheel.
Remove the floor carpet.
Release the tension from the vehicle jack and remove the jack assembly.
Remove the front liner.
Remove the nuts securing the rear lamp assembly inner cover.
Remove the inner cover.
Remove the screw securing the upper portion of the side liner and remove the liner (Fig 1).
Reverse the removal procedure to refit the replacement side liner.

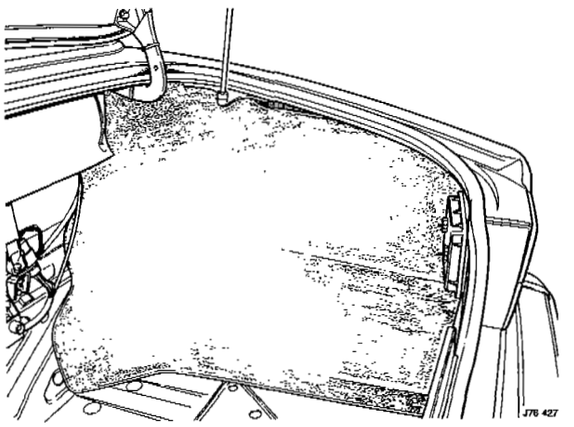


Fig 1

DATA

TORQUE FIGURES

Clamp screw clamp to spare wheel **13-16Nm**
Jack to mounting bracket **7-14Nm**

1669B/75

ELECTRICALLY OPERATED FRONT SEAT CUSHION

RENEW **76.70.11**

Open the door.
Remove the bolt securing the seat cushion.
Remove the cushion retaining plate.
Reposition the cushion (Fig 2) for access to the block connectors.
Disconnect the block connectors and remove the seat cushion assembly.
Displace the seat entry switch harness multiplug from the retaining clip.
Disconnect the seat entry switch harness multi plug.
remove the seat cushion assy and the seat entry switch.
Remove the switch bezel and discard the cushion.
Reverse the removal procedure to refit the seat cushion.

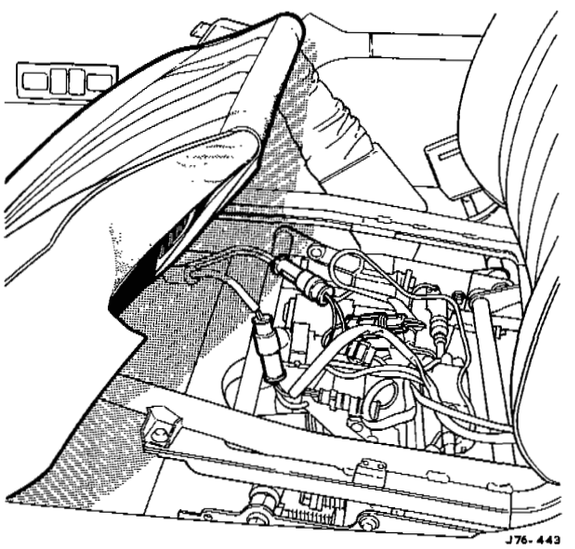


Fig 2

1669B

ELECTRICALLY OPERATED FRONT SEAT

RENEW **76.70.10**

Open the front door.
Remove the bolt securing the seat cushion.
Remove the cushion retaining plate.
Reposition the cushion for access to the block connector.
Disconnect the block connector and remove the seat cushion assembly.
Cut and remove the harness securing straps.
Disconnect the reading lamp and recline block connectors.
Reposition the harness away from the seat runners.
Remove the screws (Fig 1) securing the seat to the seat runners.
Open the rear door.
Remove the seat to seat runner securing screws and remove the front seat through the front door.
Reverse the removal procedure to refit the front seat.

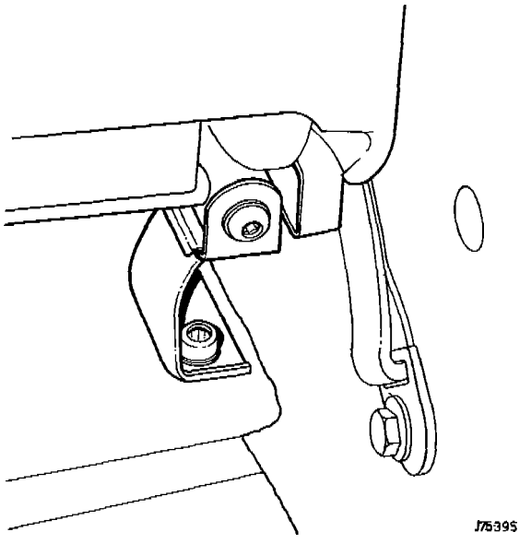


Fig 1

1669B/81

ELECTRICALLY OPERATED FRONT SEAT-RUNNER AND MOTOR

RENEW **76.70.08**

Open the front door.
Remove the bolt securing the seat cushion.
Remove the cushion retaining plate.
Reposition the cushion for access to the block connector.
Disconnect the block connector and remove the seat cushion assembly.
Cut and remove the harness securing straps.
Disconnect the reading lamp and recline block connectors.
Reposition the harness away from the seat runners.
Remove the screws securing the seat to the seat runners.
Open the rear door.
Remove the seat to seat runner securing screws and remove the front seat through the front door.
Remove the bolts (Fig 2) securing the rear motor assembly.
Motor the seat to the fully rearward position and remove the front securing bolts,
Remove the front securing bolts and reposition the motor assembly for access.
Reposition the sound deadening material and remove the cable clamp securing nuts.
Remove the clamp.
Disconnect the seat multi plugs.
Remove the runner and motor **assembly.**

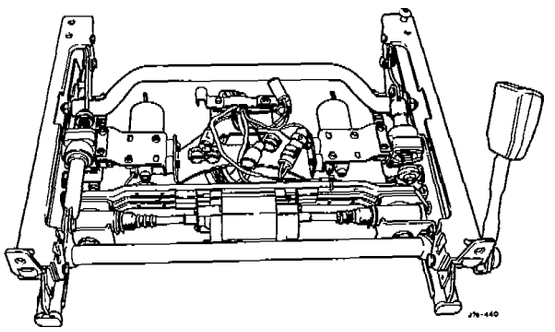


Fig 2

Remove the spacer washers from the the seat mountings and discard the assembly.
Reverse the removal procedure to refit the replacement runner and motor assembly.

1669B/81

ELECTRICALLY OPERATED FRONT SEAT BACK FINISHER

RENEW **76.70.09**

Open the door.
Switch on the ignition.
Move the seat forward to give access to the outer securing screws.
Switch off the ignition and open the rear door.
Remove the finishers and screws securing the back finisher.
Remove the securing screw aperture finisher.
Remove and discard the seat back finisher.
Reverse the removal procedure to refit the replacement finisher.

1669B/82

FRONT SEAT HEAD REST - ELECTRICALLY OPERATED SEAT

RENEW **76.70.14**

Open the door.
Switch on the ignition.
Move the seat forward to give access to the outer securing screws.
Switch **off** the ignition and open the rear door.
Remove the finishers and screws securing the back finisher.
Remove the securing screw aperture finisher.
Remove and discard the seat back finisher.
Displace the rear reading lamp from the front seat headrest.
Note the position of and disconnect the reading lamp feed wires.
Place the lamp aside.
Remove the reading lamp finisher securing screws and remove the lamp finisher.
Remove the grommet from the headrest harness.
Position the harness into the headrest tube.
Displace the headrest retaining clip (Fig 1) and the headrest from its mounted position.
Remove the headrest retaining clip from the headrest tube.

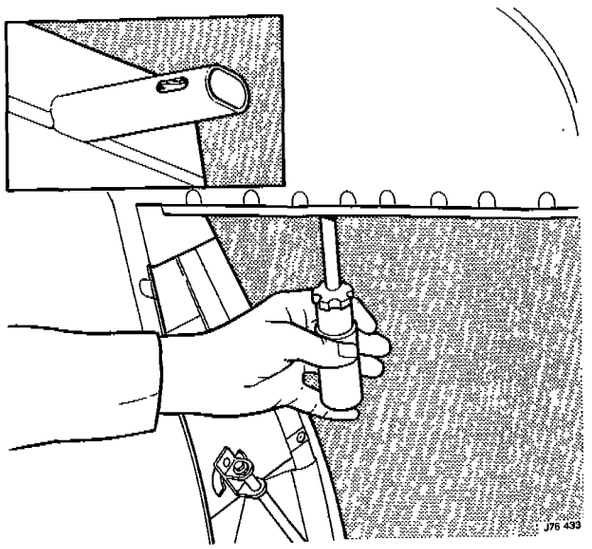


Fig 1

Remove the harness from the headrest and discard the headrest.
Reverse the removal procedure to fit a replacement headrest.

1669B/82

FRONT FLOOR CARPET

RENEW **76.49.02**

Open the door.
Lift out the carpet (Fig 1).
Fit and align the replacement carpet in position.
Close the door.

1669B/70

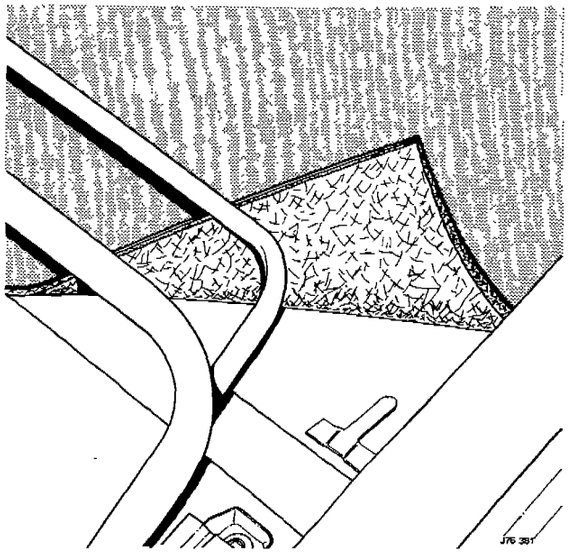


Fig 1

FRONT SEAT

RENEW **76.70.01**

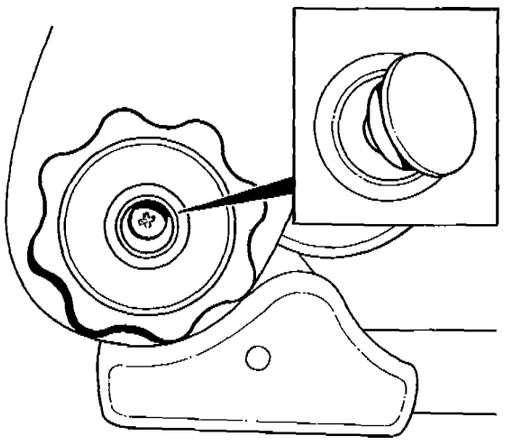
Open the door.
Remove the front seat cushion 76.70.02
Disconnect the reading lamp **block** connector and move the seat fully forward.
Remove the seat runner to floor securing **screws,** move the seat fully rearward and open the rear door.
Remove the remaining seat runner to floor securing screws, disconnect the springs from the floor brackets and remove the seat assembly from the vehicle.
Remove the seat runner assister springs, operate the seat runners for access to the rear securing bolts and remove the seat runner to seat securing bolts.
Remove the seat runner and discard seat.
Reverse the removal procedure to refit the replacement seat.

0065b

FRONT SEAT BACK FINISHER

RENEW **76.70.03**

Open the doors.
Remove the front seat cushion 76.70.02.
Remove the front seat 76.70.01.
Remove the **back** finisher and recline handle finishers (Fig 2) and securing screw.
Remove the recline handle and the outer finishers.
Displace the top finisher from the headrest area and remove the back finisher from the spring retainers in an upward direction.



J7B 331

Fig 2

Discard the seat back.
Reverse the removal procedure to fit the replacement seat back.

0069b

FRONTSEAT BELT BUCKLE UNIT

RENEW **76.73.02**

Disconnect the electrical block connector (Fig 1) feeding the buckle unit (3 Fig 1) located under the seat cushion.
Remove the front seat and buckle unit securing bolt cover.
Remove the bolt (1 **Fig 1**).
Refit to fit the cover the replacement buckle unit to the seat frame with the securing bolt.
Refit the seat to the vehicle and reconnect the block connector.

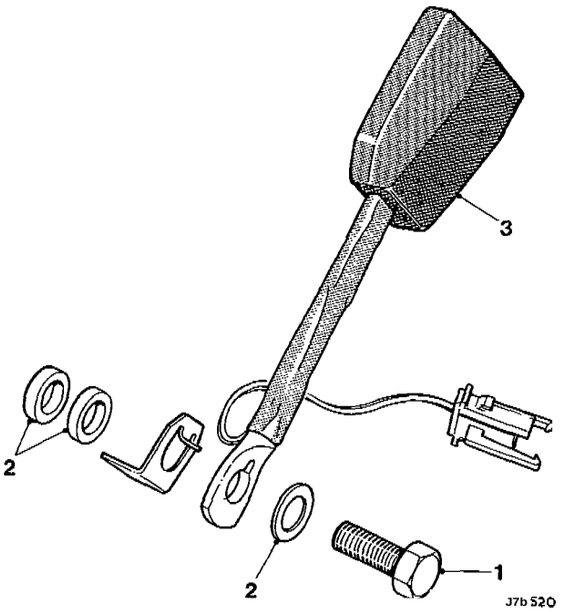


Fig 1

DATA

TORQUE FIGURES

*Seat **buckle to seat** frame **27.1 Nm***

SPANNER SIZES

17mm

0393b

FRONT SEAT BELT LEFT HAND

RENEW **76.73.10**

Open the door.
Remove the 'B' post lower trim pad 76.13.29
Remove the seat belt upper anchor securing nut cover and nut.
Reposition the seat belt for access, remove the spacer and wavey washer and disconnect the block connector.
Unclip the **'B'** post upper trim pad.
Displace the upper trim pad from ist mounted position.
Pass the seat belt through the trim pad and remove the upper trim pad.
Remove the seat belt finisher from the **'B'** post aperture and reposition the seat belt through the **'B'** post.
Remove the seat belt reel securing bolt and remove the seat belt reel.
Renew the seat cushion 76.70.02
Cut and remove the seat belt buckle block connector securing strap and disconnect the seat belt buckle block connector.
Remove the seat belt buckle mounting bracket to seat assembly securing bolt and remove the belt buckle assembly from the seat.
Reverse the removal procedure to refit the replacement belt.

0075b

FRONT SEAT BELT RIGHT HAND

RENEW **76.73.21**

Open the door.
Remove the 'B' post lower trim pad 76.13.29
Remove the seat belt upper anchor securing nut cover and nut.
Reposition the seat belt for access, remove the spacer and wavey washer and disconnect the block connector.
Unclip the 'B' post upper trim pad.
Displace the upper trim pad from ist mounted position.
Pass the seat belt through the trim pad and remove the upper trim pad.
Remove the seat belt finisher from the 'B' post aperture and reposition the seat belt through the 'B' post.
Remove the seat belt reel securing bolt and remove the seat belt reel.
Renew the seat cushion. 76.70.32
Cut and remove the seat belt buckle block connector securing strap and disconnect the seat belt buckle block connector.
Remove the seat belt buckle mounting bracket to seat assembly securing bolt and remove the belt buckle assembly from the seat.
Reverse the removal procedure to refit the replacement belt.

0078b

FRONT SEAT CUSHION

RENEW **76.70.02**

Open the door.
Remove the bolt securing the seat cushion and remove the cushion retaining plate.
Lift cushion for access to the block connector situated below the cushion and disconnect the seat belt **pad** block connector.
Cut and remove the harness securing ratchet strap.
Remove the seat cushion.
Reverse the removal procedure to refit the replacement seat cushion.

0243b

CUSHION COVER – FRONT SEAT

RENEW **76.70.14**

Disconnect the electrical block connectors beneath the seat cushion, remove the front securing screw and lift out the cushion.
Remove all the clips (Fig 1) securing the cushion cover in position and remove the cover.

Place the replacement cushion cover in the approximate position over the seat frame and secure one side of the cover to the frame with the clips.
Tension the cover with hand pressure and secure the side opposite that which is already clipped and repeat for the remaining two sides.
Ensure that the clips are in the position illustrated (Fig 1) and fit the cushion back in the seat frame, refit the fixing screw and reconnect the electrical block connections.

0390b

FRONT SEAT CUSHION SUPPORT CENTRE

RENEW **76.70.19**

Disconnect the electrical block connectors below the rear of the seat cushion and lift out the cushion.
Turn the cushion over and using pliers or suitable implement, release the support from the wire clips.
Place the replacement support in position and secure with the wire clips.
Fit the seat back in position in the front seat frame and reconnect the electrical block connectors.

0391b

FRONT SEAT HEADREST

RENEW **76.70.30**

Open the door.
Remove the:
- Front seat cushion 76.70.02
- Front seat 76.70.01
- Front seat back finisher 76.70.03

Pull the rear reading lamp clear of the headrest assembly, disconnect the feed wires and place the lamp aside.
Cut the ratchet straps securing the lamp harness to the seat frame.
Remove the bolt (Fig 2) securing the headrest and carefully pull the headrest from its mounted position.
Remove the screws and the 'fir tree' clips securing the housing to the headrest.
Displace the grommet from the feed wires/headrest and remove the headrest.
Remove the housing.
Reverse the removal procedure to fit the replacement headrest.

0071b

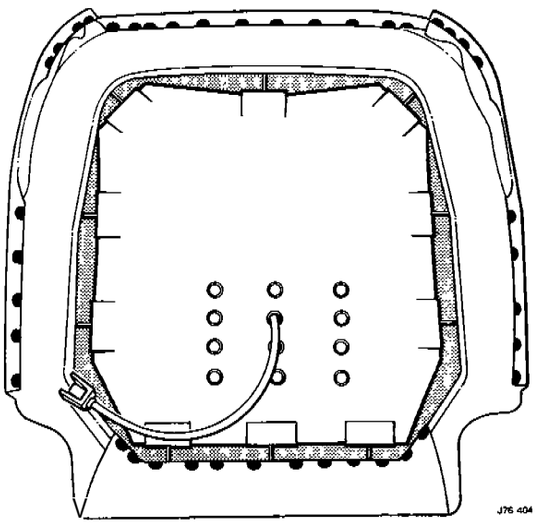


Fig 1

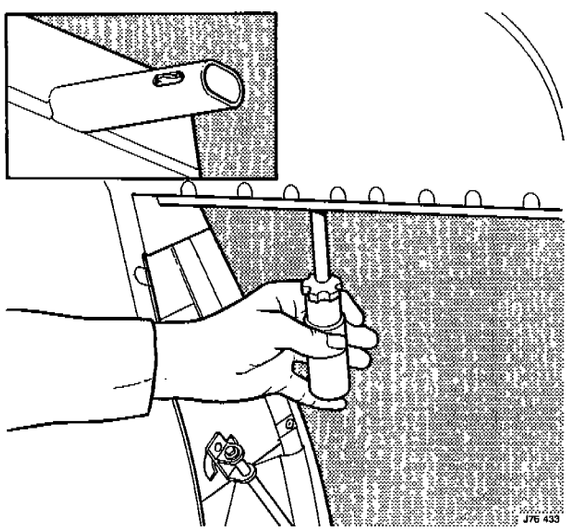


Fig 2

FRONT SEAT RUNNERS AND ADJUSTER ASSEMBLY

RENEW **76.70.24**

Open the door
Remove the:
front seat cushion 76.70.02
Front seat 76.70.01
Remove the seat belt buckle securing bolt cover and bolt.
Remove the buckle assembly.
Operate the runner for access to the rear securing screws (Fig 1) and remove the screws securing the runner/adjuster to the seat.
Remove the runner/adjuster assembly and discard.
Reverse the removal procedure to refit the replacement runner/adjuster.

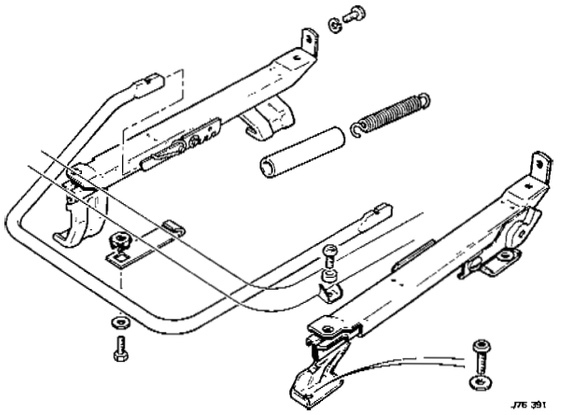


Fig 1

DATA

TORQUE FIGURES

Seat runners to floor 36.5Nm

SPANNER SIZES

No 50 Torx

0070b

FRONT SEAT BELT ADJUSTER

RENEW **76.73.12**

Ooen the doors.
Remove the 'B' post upper trim pad and remove the finisher plate.
Reposition the adjuster to gain access to the lower securing screw, remove the screws (Fig 2).
Remove the adjuster and spacers.
Reverse the removal procedure to refit the replacement adjuster.

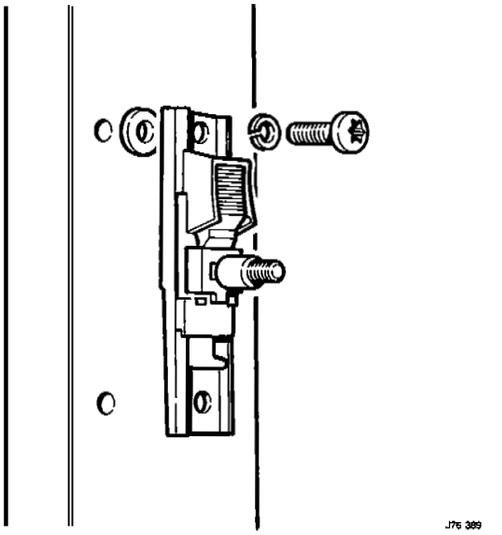


Fig 2

0076b

REAR CENTRE SEAT BELT-STATIC

RENEW **76.73.31**

Open the **door.**
Remove the rear seat cushion 76.70.37
Remove the seat belt buckle securing **bolt** and remove the buckle assembly.

Remove the four star washers, the two spacers and the side seat belt buckle.

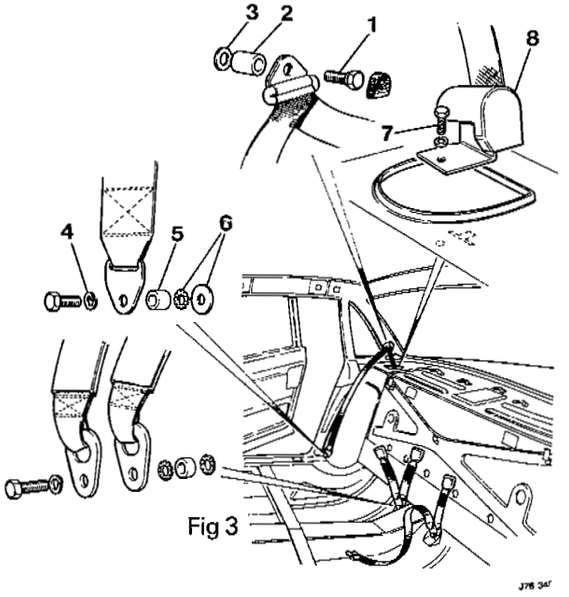


Fig 3

Remove the centre lap strap buckle and the seat belt strap securing bolt.
Remove the strap and buckle assembly.
Remove the four star washers, the two spacers and the side seat belt buckle.
Reverse the removal procedure to fit the replacement static seat belt.

0079b

REAR SEAT ARMREST

RENEW **76.70.39**

Open the door.
Remove the:
Rear seat cushion 76.70.37
Rear seat squab 76.70.38
Remove the staples and clips securing the rear armrest cover and reposition the cover for access to the armrest securing bolts.
Remove the armrest hinge securing bolts (1 Fig 1).and remove the squab securing brackets

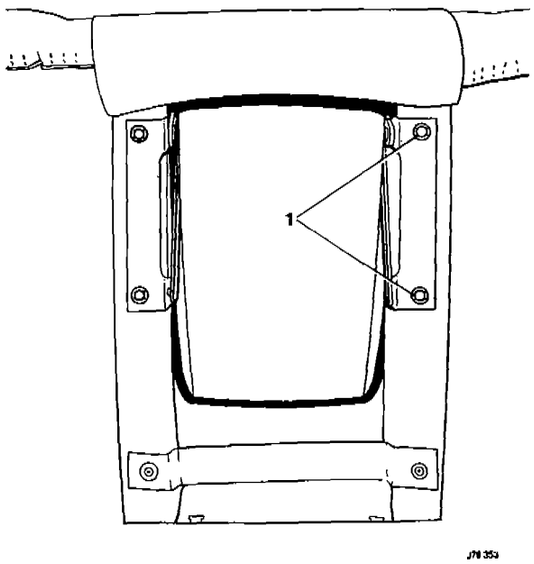


Fig 1

Reposition the squab **and** the armrest for access and displace the cover from the seat, remove the armrest through the rear of the seat squab and remove the hinge to armrest securing screws, remove the hinge.
Discard the armrest.
Reverse the removal procedure to fit the replacement armrest.

0074b

REAR SEAT CUSHION

RENEW ***76.70.37***

Open the door.
Remove the seat cushion securing screws **lift** and remove the rear seat cushion. Reverse the removal procedure to refit the replacement cushion.

0072b

REAR SEAT SQUAB

RENEW ***76.70.38***

Open the door.
Remove the rear seat cushion 76.70.37
Remove the screws (1 Fig 1) securing the rear squab and lift the squab to release the rear retaining clips.
Reposition the rear seat belts and remove the squab assembly from the vehicle.
Remove the staples and clips securing the rear armrest cover and reposition the cover for access to the armrest securing bolts.
Remove the armrest hinge securing bolts **(1** Fig 2) and remove the squab securing brackets.
Reposition the squab and the armrest for access and displace the cover from the **seat,** remove the armrest through the rear of the seat squab and remove the cover from the seat.
Discard the seat squab.
Reverse the removal procedure to fit the replacement seat squab.

0073b

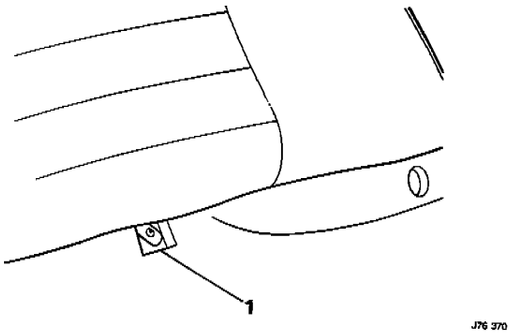


Fig 1

REAR SHELF FINISHER

RENEW ***76.67.06***

Open the rear door and remove the rear seat cushion and squab.
Slacken and remove the rear shelf securing screws (1 Fig 3) and pull the trim material from the rear body panel and remove the rear shelf finisher (2 Fig 3), and remove the extraction vents from the retaining clips.
Remove the rear seat belt blanking plugs where fitted and refit to the replacement finisher.
Fit the air extraction vents to the finisher, place the finisher in position and secure with the screws.
Refit the rear seat squab and cushion and close the door.

0396b

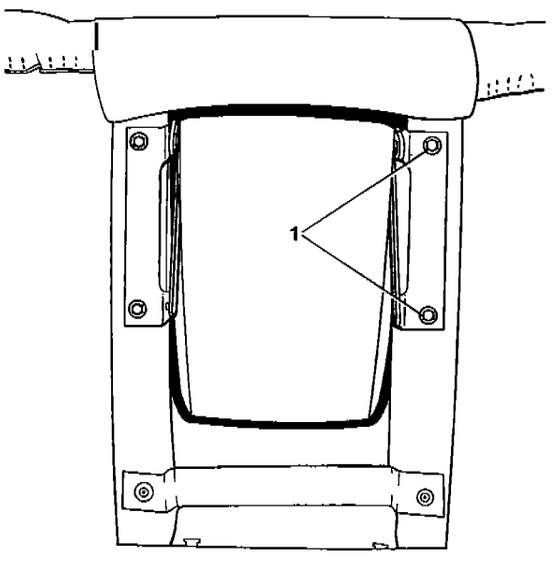


Fig **2**

REAR SIDE SEAT BELT

RENEW **76.73.18**

Open the door.
Remove the:
Rear seat cushion 76.70.37
Rear seat squab 76.70.38
Rear parcel tray 76.67.06

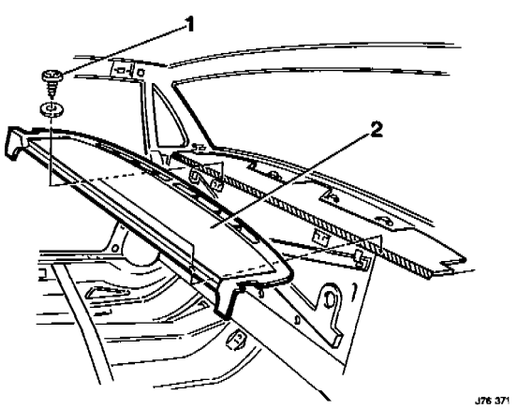


Fig 3

Remove the foam pad from the rear shelf and remove the seat belt buckle securing bolt (Fig **1**).
Remove the buckle assembly and collect the two star washers and spacers (5 Fig 1).
Remove the side seat belt buckle and the lower anchorage bolt.
Displace the belt and collect the upper spacer.
Remove the seat belt reel securing bolt (7 Fig 1) and remove the reel (8 Fig **1**).
Remove the seat belt reel to securing bracket nut and bolt, discard the reel and belt assembly.
Reverse the removal procedure to refit the replacement bely assembly.

0077b

REAR FLOOR CARPET

RENEW **76.49.03**

Open the front door.
Move the front seat fully forward.
Open the rear door.
Remove the screws securing the rear of the seat runners to the floor.
Carefully ease the rear of the front seat upwards to **allow** removal of the rear carpet.
Remove the carpet **(Fig** 2). lower the seat and collect the spacers.
Reverse the removal procedure to refit the replacement carpet.

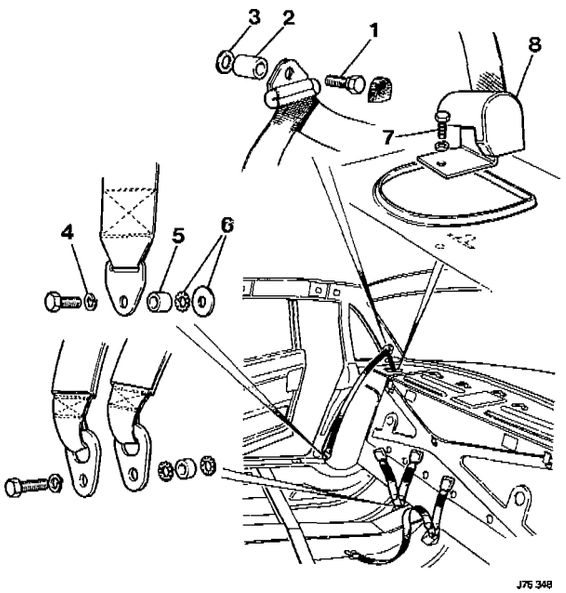


Fig **1**

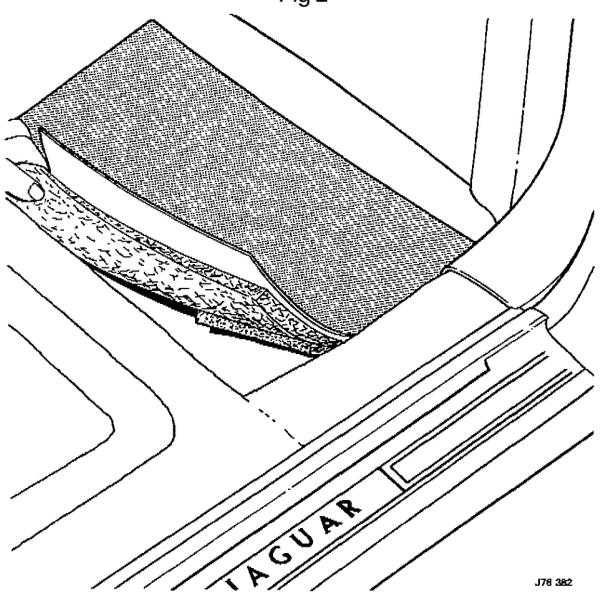


Fig 2

DATA

TORQUE FIGURES

Seat runners to floor 36.5Nm

SPANNER SIZES

No 50 Torx

1669B/70

A POST LOWER TRIM PAD

RENEW **76.13.30**

Open the door.
Displace the draught welting from the lower 'A post area.
Remove the trim pad securing screw and remove the trim **pad.**
Turn the fuse label cover retaining peg and remove the fuse label cover.
Discard the trim.
Reverse the removal procedure to refit the replacement trim.

16698

B-C POST CAPPING

RENEW **76.43.34**

Open the doors.
Remove the four B post capping screws (1 Fig 1) and remove the trim (2 Fig 1).
Remove the lower finisher from the trim.
Glue the lower finisher (Fig 2) to the replacement trim, position the trim over the B post and secure with the fixing screws.
Close the doors.

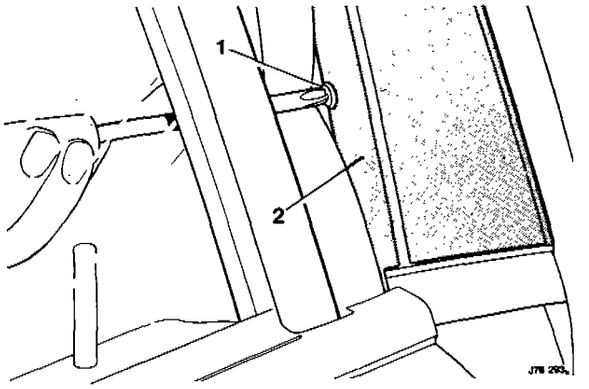


Fig 1

DATA

TORQUE FIGURES

'B' post securing screws 2-4Nm

0397b

B POST, LOWER TRIM PAD

RENEW **76.13.29**

Open the front door and remove the front seat cushion.
Move the seat fully rearward.
Remove the B post lower trim pad front securing clip and move the seat fully forward.
Open the rear door and remove the B post lower trim pad rear securing clip.
Move the seat belt for access, remove trim pad, release the trim pad from under the upper trim pad and slide up the B post to remove.
Fit and align the replacement trim pad and reverse the remaining removal procedure to refit.

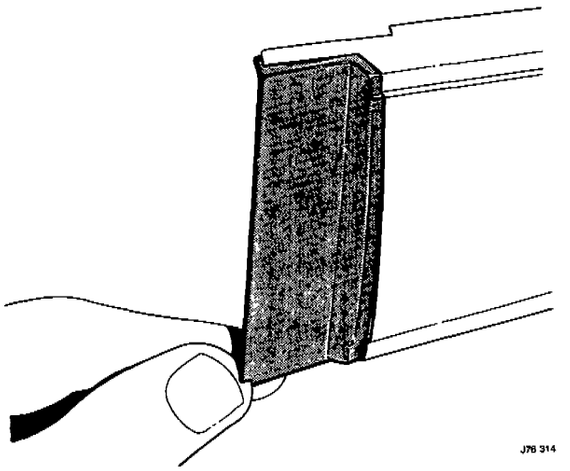


Fig 2

0007b

B POST UPPER TRIM PAD

RENEW **76.13.28**

Open the doors.
Remove the seat belt bolt lower anchor bolt finisher and remove the bolt (1 Fig 3).
Collect the wavy washer (4 Fig 3), spacer (5 Fig 3) and bracket.
Displace the draught welting from the upper trim pad, release the trim pad flaps from the B post and remove the trim pad.
Reverse the removal procedure to refit the replacement trim.

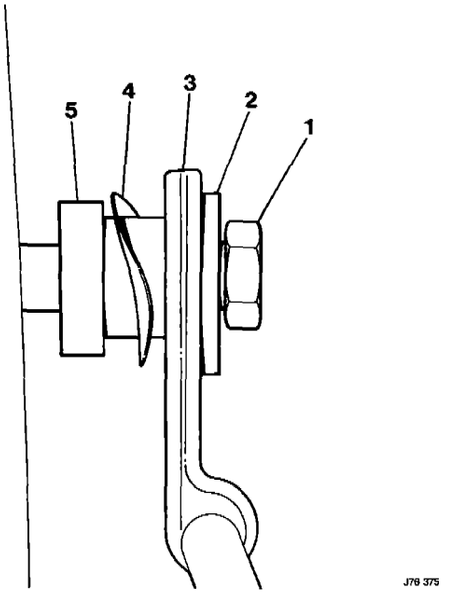


Fig 3

0006b

CANTRAIL CRASH ROLL

RENEW **76.13.10**

Open the doors.
Unclip the crash roll (Fig 1) from the cantrail.
Remove the crash roll.
Note the position of the clips and transfer to the replacement roll.
Align the crash roll clips with the holes in the cantrail and press home.
Close the doors.

0004b

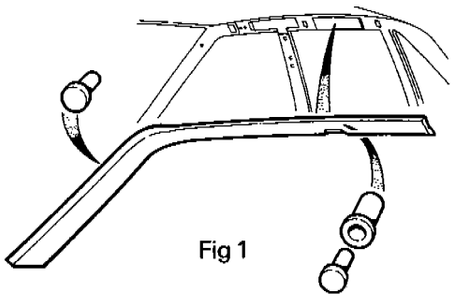


Fig 1

CONSOLE ASHTRAY

RENEW **76.67.18**

Open the door.
Open the centre console glovebox lid and remove the ashtray assembly securing screws (1 Fig 2).
Release the rear of the console finisher for access and remove the ashtray assembly (2 Fig 2).
Open the ashtray lid, remove the inner ashtray and discard the assembly.
Reverse the removal procedure to refit the replacement ashtray assembly.

0064b

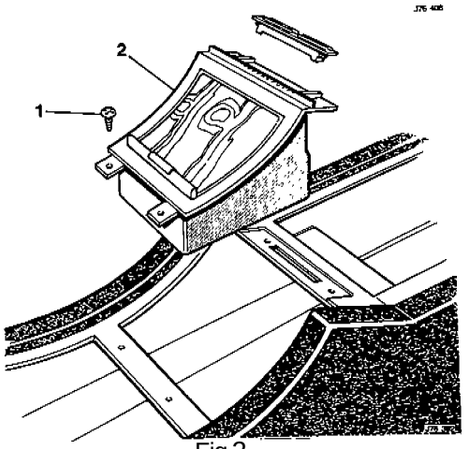


Fig 2

CONSOLE ASSEMBLY

RENEW **76.25.01**

Open the door.
Remove the console ashtray **76.67.18.**
Remove the console finisher **76.25.19.**
Remove the radio console **76.25.15.**
Remove the console glovebox securing screws (1 Fig 3) and the fuse box to glove box securing screws.
Remove the console glove box assembly (2 Fig 3).
Remove the centre veneer panel assembly 76.47.06
Remove the centre vent assembly.
Remove the upper console securing screw (1 Fig 4) and carefully displace the console rearwards, Note: retain the air box in position.
Close the glovebox lid.
Remove the console assembly.
Remove the spire clips.
Remove the glove box lid securing screws, remove the lid.
Remove the rear control knob.
Untape the rear ducts from the console.
Remove the air direction box/duct assembly.

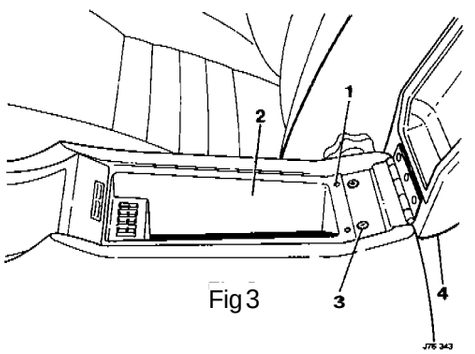


Fig 3

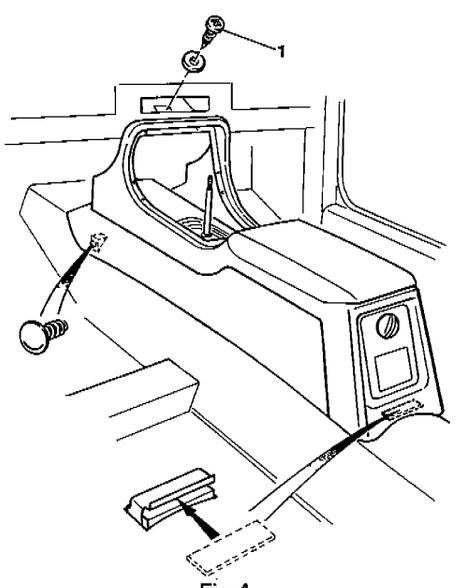


Fig 4

Displace the rear heater outlet retaining tangs.
Remove the outlet **assembly.**
Place the console assembly aside.
Fit and seat the rear heater outlet to the replacement console assembly.
Reverse the remaining removal procedure to refit the replacement console assembly.

0011b

CONSOLE FINISHER – AUTOMATIC

RENEW **76.25.19**

Open the door.
Remove the console ashtray 76.67.1*8*
Using **a** screwdriver, release the gearshift rubber surround locating clips and carefully remove the finisher.
Move the selector lever to the rearward position, remove the wingnuts securing the rear of the veneer, and carefully remove the finisher (Fig 1).
Reverse the removal procedure to refit.

0015b

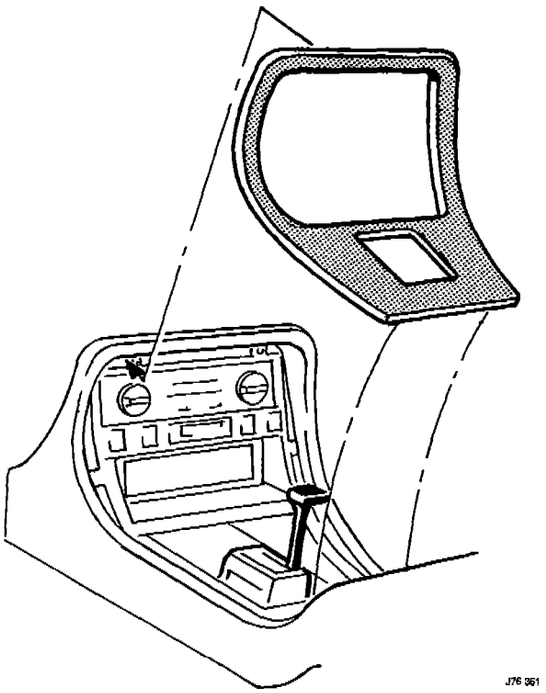


Fig 1

CONSOLE GLOVEBOX

RENEW **76.25.16**

Open the door and remove the console ashtray 76.67.18
Remove the **glovebox** securing screws (1 Fig 2) and the fuse **box** to glove box securing screws.
Remove the glovebox (2 Fig 2).
Reverse the removal procedure to refit the glovebox.

0013b

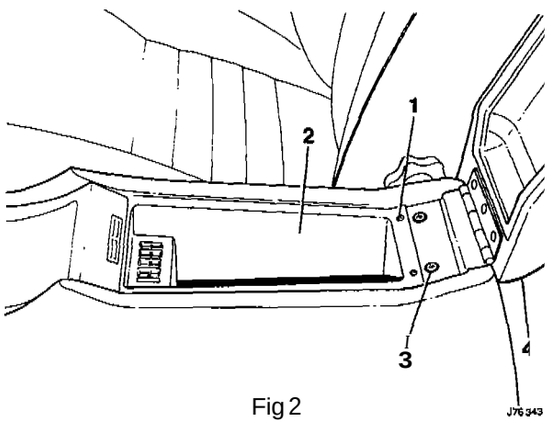


Fig 2

CONSOLE GLOVEBOX LID

RENEW **76.25.18**

Open the door.
Open the glovebox lid **(4** Fig 2) and remove the securing screws (3 Fig 2).
Remove the lid assembly.
Reverse the removal procedure to refit the lid noting to align the lid with the console prior to finally tightening the lid securing screws.

0014b

DASH LINER-DRIVERS SIDE

RENEW **76.46.11**

Open the door.
Remove the screws securing the dash liner (Fig 1) and release the liner securing clip.
Remove the dash liner.
Reverse the removal procedure to refit the replacement liner.
Note: align the footwell heater duct prior to securing the liner with the screws.

0036b

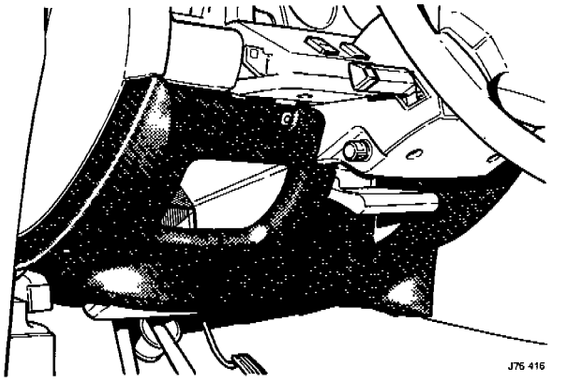


Fig 1

DASH LINER-PASSENGERS SIDE

RENEW **76.46.15**

Open the door.
Remove the screws securing the dash liner (Fig 2) and release the liner securing clip.
Remove the dash liner.
Reverse the removal procedure to refit the replacement liner.

0037b

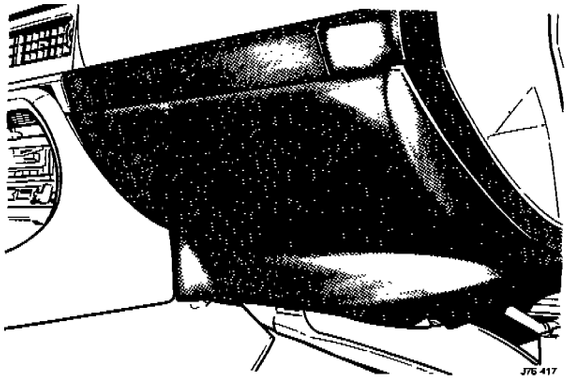


Fig 2

DOOR AIR VENT GROMMET

RENEW **80.00.00**

Open the door.
Carefully depress the grommet (Fig 3) and remove.
Reverse the removal procedure to refit.

0359b

CONSOLE FINISHER - MANUAL

RENEW **76.25.19**

Open the door.
Remove the console ashtray 76.67.18
Slacken the gear lever locknut, remove the gear lever knob and locknut, dissengage the retaining clips from the upper console area and remove the finisher.
Reverse the removal procedure to refit.

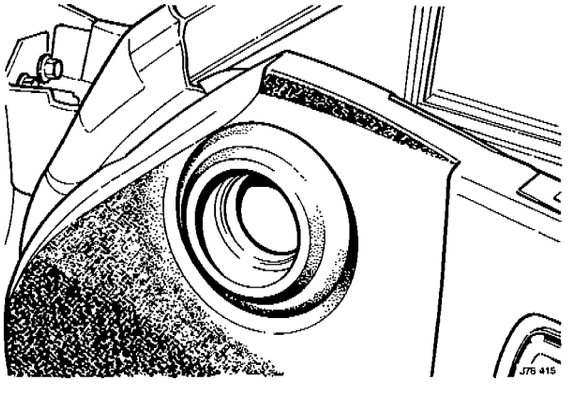


Fig 3

DATA

SPANNER SIZES

16mm

0015b

FASCIA BOARD

RENEW 76.46.01

Open the door.
Remove the:

Dash liner drivers side 76.46.11
Dash liner passenger side 76.46.15
Fascia closing panel drivers side 76.46.28
Fascia closing panel passengers side 76.46.27
Fascia centre veneer panel 76.47.06
Steering the wheel 57.60.01

Remove the screws securing the instrument housing and disconnect the instrument block connectors.
Remove the instrument housing.
Remove the centre console upper securing screw (1 Fig 1), carefully manoeuvre the console rearwards for access to the fascia tie bar securing nuts. Ensure that the rear heater outlet and control are not disturbed.
Remove the fascia tie bar securing nuts and move the tie bar away from the fascia.
Remove the passenger footwell duct and remove the screws securing the relay panel to the glove box and position the panel in the footwell.
Remove the bolts securing the fascia outer body bracket to the fascia, remove the fascia centre securing bolt, access to this bolt is through the instrument housing apeture.
Remove the fascia outer lower securing bolts, disconnect the trip computer and lighting module block connectors, remove the screws securing the trip computer/lighting module and remove the module from the fascia.
Manoeuvre the fascia rearwards for access, disconnect the solar sensor block connector, note the position and disconnect the vacuum hoses, disconnect the glove box lamp block connector and remove the fascia assembly.
Remove the screws securing the glovebox lid and remove the lid.
Remove the screws securing the glovebox lid striker, remove the striker and collect the spacer.

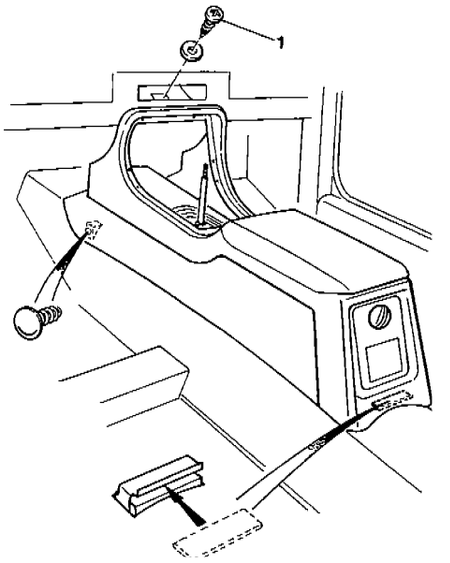


Fig 1

Remove the glovebox inner and outer securing screws, manoeuvre the glovebox from the fascia (Fig **1**).
Remove the screws securing the glovebox frame and remove the frame.
Remove the frame upper spacing washers.
Disconnect and reposition the centre vacuum hose through the grommet.
Remove the screws securing the centre vent and remove the vent assembly.
Remove the screws securing the instrument housing locating bracket and remove the bracket.
Remove the solar sensor panel from its mounting position (Fig 2).
Remove the screws securing the defrost outlet duct and remove the ducts.
Remove the screws securing the defrost vent, disconnect the vacuum hose and remove the vent assembly.
Carefully displace the solar sensor harness from its position, cut the ratchet strap securing the harness and vacuum hoses *to* the fascia.
Remove the grommet from the fascia and the harness/ vacuum hose assembly.
Remove the outer ventilator assemblies and the spire nuts from the fascia.
Discard the fascia.
Reverse the removal procedure to refit the replacement fascia.

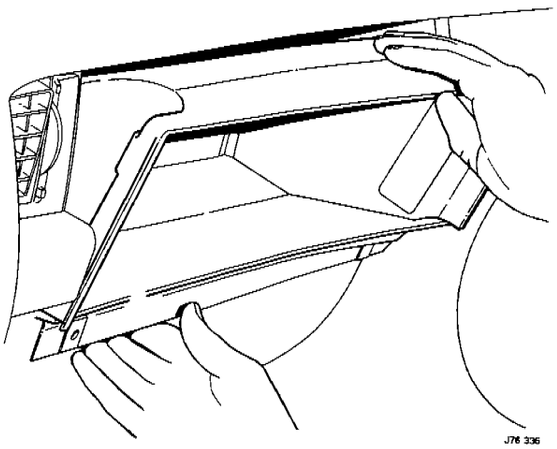


Fig 1

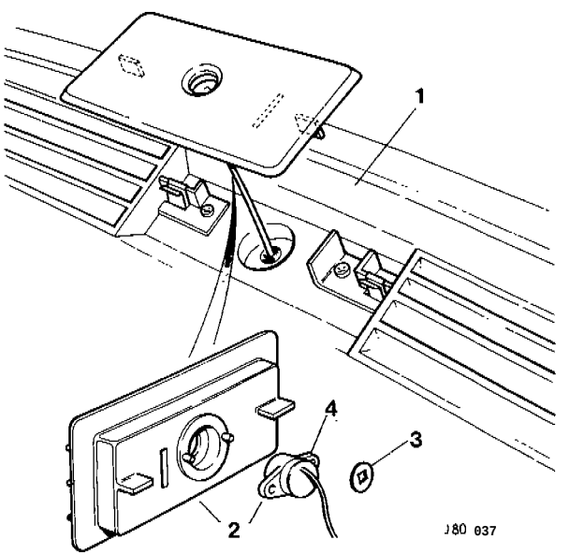


Fig 2

DATA

TORQUE FIGURES

Fascia bracket screw ***7-10Nm***
Fascia centre to air conditioning unit strut ***22-28Nm***
Fascia ***support*** *bracket to 'A' post* ***22-28Nm***
Fascia to side bracket ***15-18Nm***
Steering wheel to steering shaft ***35-45Nm***
Strut ***to*** *centre fascia fixing* ***5-7Nm***
Strut to fascia end ***7-10Nm***

SPANNER SIZES

8mm
10mm
13mm
24mm

OILS/GREASES/SEALANTS

Split collars ***to*** *shaft* ***Castrol LM Grease.***

0035b

FASCIA CLOSING PANEL DRIVERS SIDE

RENEW **76.46.28**

Open the door.
Remove the screw securing the dash liner to the closing panel.
Remove the screws securing the closing panel and displace the dash liner from the the spring retaining clips.
Remove the lower screw spacing washers and spire clip.
Remove and discard the closing panel (Fig **1**).
Reverse the removal procedure to fit the replacement closing panel.

0039b

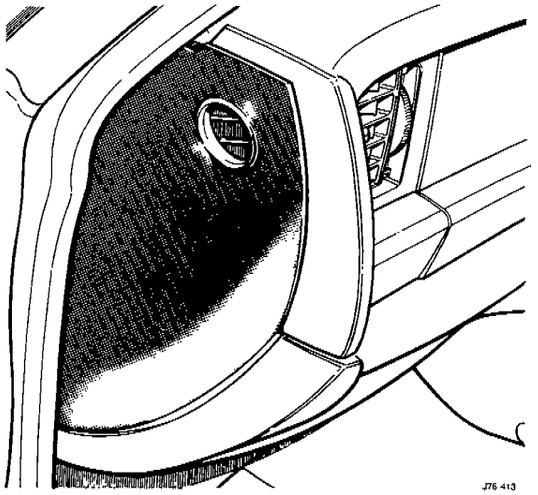


Fig 1

FASCIA CLOSING PANEL PASSENGER SIDE

RENEW **76.46.27**

Open the door.
Remove the screw securing the dash liner to the closing panel.
Remove the screws securing the closing panel and displace the dash liner from the the spring retaining clips.
Remove the lower screw spacing washers **and** spire clip.
Remove and discard the closing panel **(Fig** 2).
Reverse the removal procedure to fit the replacement closing panel.

0038b

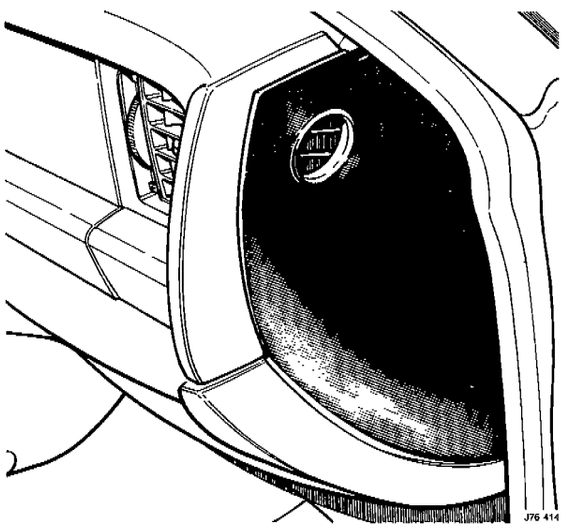


Fig 2

FASCIA CENTREVENEER PANEL

RENEW **76.47.06**

Open the door.
Open the glovebox lid.
Carefully release the veneer panel (Fig 3) from the retaining clips and remove the panel.
Remove the retaining clip securing screws and remove the clips.
Remove the centre vent and discard the veneer panel.
Reverse the removal procedure to fit the replacement veneer panel.

0040b

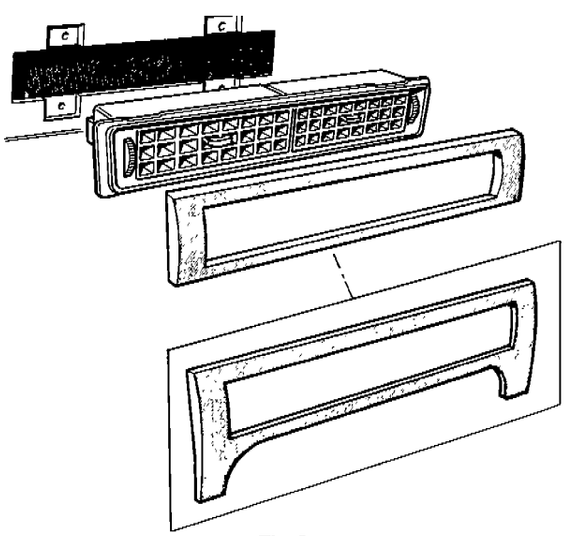


Fig 3

GLOVE BOX

RENEW **76.52.03**

Open the door.
Remove the dash liner passenger side 76.46.15
Remove the screws (1 Fig 1) securing the the glove box lid, lift the lid to disengage the guides and remove the lid assembly.
Remove the upper screws securing the interior of the glovebox.
Remove the glovebox striker securing screws (3 Fig 1) and collect the plate and striker.
Remove the screws securing the glove box to the fascia rail.
Displace the relay mounting panel to glovebox rear securing screws and slacken the front securing screws.
Displace the relay mounting panel and glovebox for access.
Disconnect the glove box lamp **block** connector and boot release switch harness multi plug.
Remove the glove box assembly (Fig 2).
Displace the glove box lamp from its mounted position, cut and remove the lamp harness securing ratchet strap.
Displace the harness from the self adhesive strip and disconnect the switch **feed** wires and remove *the* lamp and harness assembly.
Release the lamp switch retaining lugs and remove the switch.
Remove the screws securing the boot release switch mounting to the glove box.
Remove the switch and harness assembly.
Remove the spire clips and remove the lid rubber buffers.
Discard the **g**love **box.**
Reverse the removal procedure to refit the replacement glovebox.

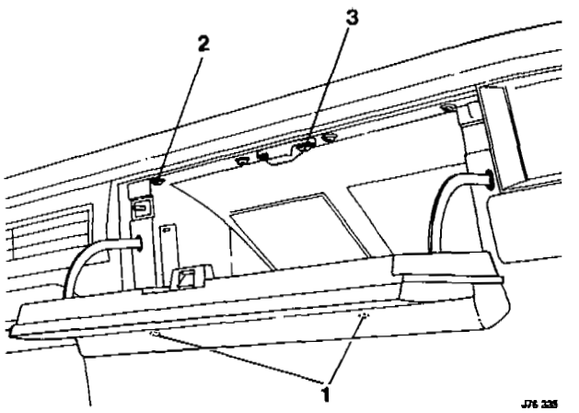


Fig **1**

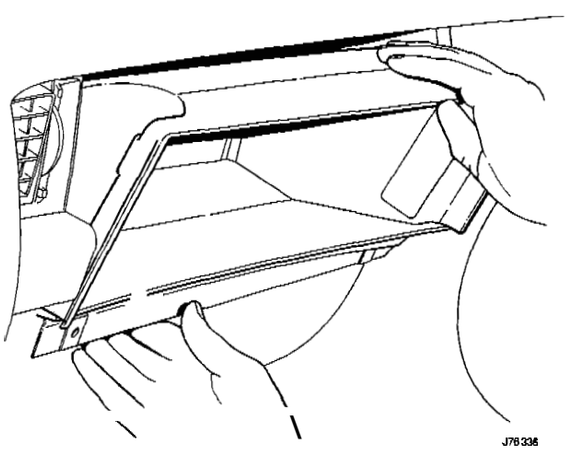


Fig 2

DATA

TORQUE FIGURES

Cruise control module to glove ***box*** *mounting plate* ***2.7-6.8Nm***
Glove box mounting plate to glovebox ***2-4Nm***

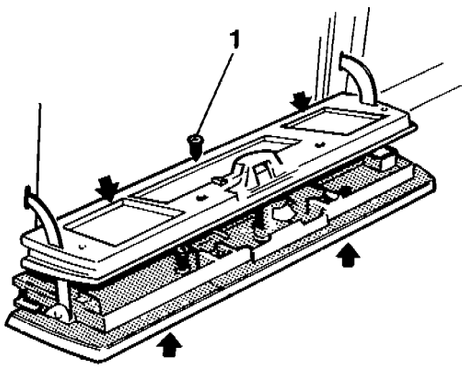
0055b

GLOVEBOX LID

RENEW **76.52.02**

Open the door.
Remove the passenger side dash liner 76.46.15
Remove the screws securing the glovebox lid, lift the lid upwards to disengage the guides and remove the lid assembly.

Remove the screws (1 Fig **1)** securing the mirror/tray assembly and remove.
Remove the lid guide clevis pin spire clips (1 Fig 2) and remove the clevis pins (2 Fig 2).
Remove the guides, remove the veneer panel securing screws and remove the veneer panel.
Slacken the the glovebox lock securing nut **(1** Fig 3), turn lock for access, remove the nut and plate and remove the lock assembly (2 Fig 3).
Remove the spire clips and discard the lid.
Reverse the removal procedure to fit the replacement lid ensuring that the lid is aligned with the apeture prior to final tightening of the lid securing screws.



J76 337

Fig 1

DATA

SPANNER SIZES

24mm

0045b

GLOVEBOX LID LOCK

RENEW ***76.52.0S***

Open the door
Open the glovebox lid and remove the screws securing the mirror and tray assembly.
Lift the mirror assembly for access, slacken the lock securing nut **(1** Fig 3) (the nut remains captive) turn the lock, finally remove the securing nut and mounting plate and remove **the** lock from the lid (2 Fig 3).
Reverse the removal procedure **to** refit the replacement lock.

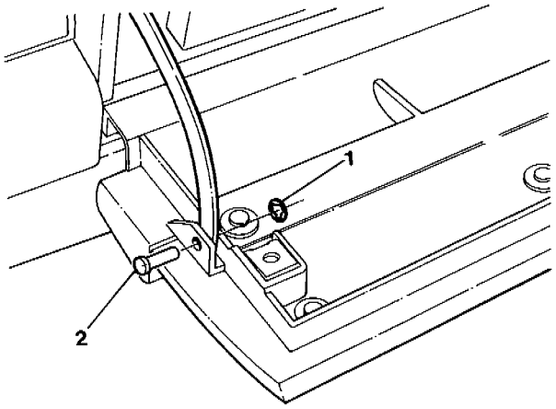


Fig 2

J76 338

DATA

SPANNER SIZES

24mm

0057b

GLOVEBOX LID VENEER PANEL

RENEW **76.47.21**

Open the door.
Open the glovebox.
Remove the screws. securing the mirror and tray assembly.
Reposition the mirror and tray assembly to gain **access** to the screws securing the veneer.

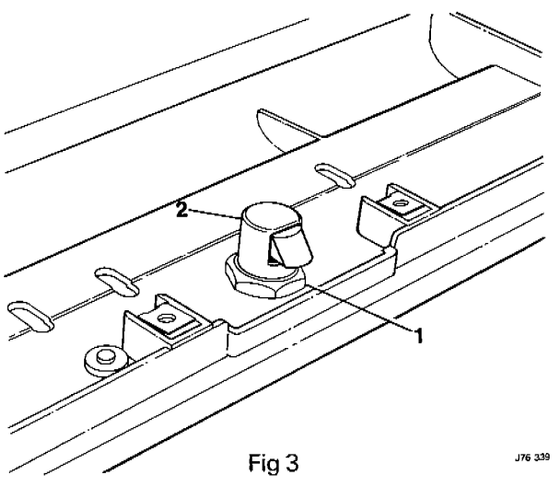


Fig 3

J76 339

Remove the screws securing the veneer panel, remove the panel and discard.
Reverse the removal procedure to refit the replacement panel.

0044b

GLOVEBOX MIRROR ASSEMBLY

RENEW ***76.52.05***

Open the door
Open the glovebox lid and remove the screws (1 Fig 1) securing the mirror and tray assembly.
Lift the mirror assembly **(1** Fig 2) and remove the mirror catch spire clip (2 Fig 2) and washer and remove the catch.
Remove the mirror spring (4 Fig 2), displace the mirror securing clip and remove and discard the mirror.
Reverse the removal procedure to refit the replacement mirror.

0056b

HANDBRAKE LEVER TRIM

RENEW **76.13.63**

Open the door.
Release the trim assembly upper clip (Fig 3) and remove the trim from the handbrake lever.
Reverse the removal procedure to fit the replacement trim,

0009b

HEADLINING REAR FINISHER

RENEW **76.64.12**

Open the door.
Release the trim finisher retaining **clips.**
Remove the trim finisher (1 Fig **4)** and making a note of the position of the retaining clips remove.
Discard the finisher,
Reverse the removal procedure to refit ensuring that the clips are fitted in the exact position on the replacement trim to the one discarded.

0062b

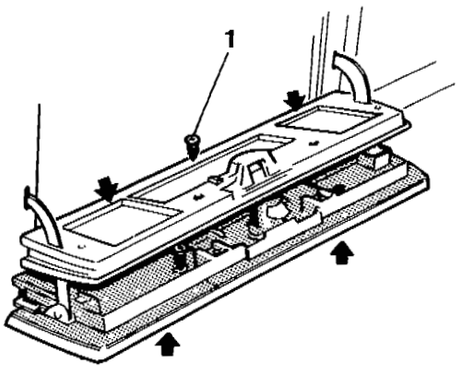


Fig 1

J76 337

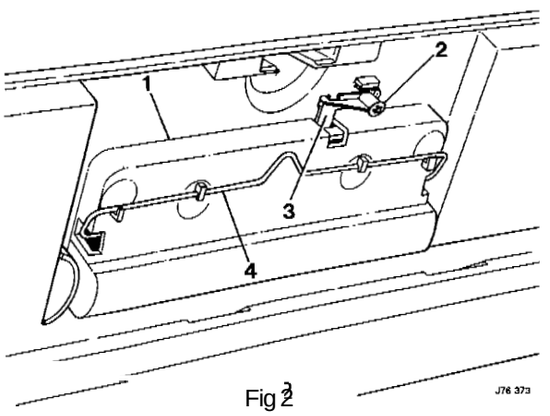


Fig 2

J76 373

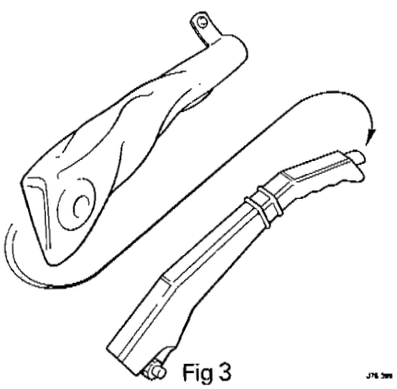


Fig 3

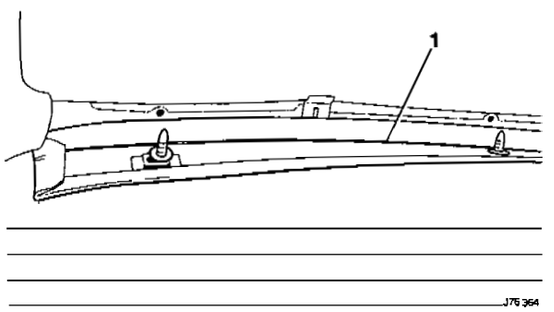


Fig 4

INTERIOR MIRROR

RENEW **76.10.51**

Open the door.
Release the fastner securing the interior lamp and lower the panel for access.
Pull to remove the mirror assembly (Fig 1) from its mounting plate.
Remove the mounting plate securing screws and remove the plate.
Reverse the removal procedure to refit the replacement mirror.

1669B/71

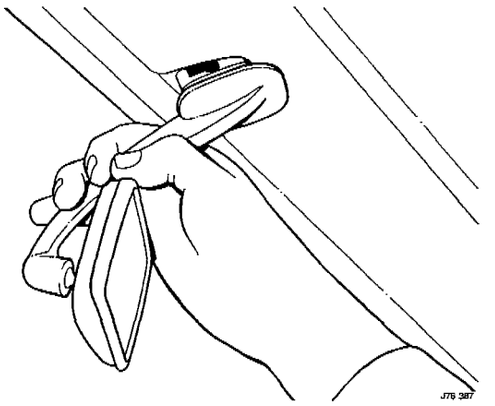


Fig 1

REAR LAMP ASSEMBLY INTERIOR TRIM FINISHER

RENEW **76.19.20**

Open the boot.
Remove the nuts securing the finisher **to** the lamp units.
Remove the finisher
Reverse the removal procedure to fit the replacement finisher.

1669B/74

REAR PARCEL TRAY

RENEW **76.67.06**

Open the door.
Remove the seat cushion securing screws lift and remove the rear seat cushion.
Remove the screws securing the rear squab and lift the Squab to release the rear retaining clips.
Reposition the rear seat belts and remove the squab assembly from the vehicle.
Remove the staples and clips securing the rear armrest Cover and reposition the cover for access to the armrest Securing bolts.
Remove the armrest hinge securing bolts and remove the Squab securing brackets.
Reposition the squab and the armrest for access and displace the cover from the seat, remove the armrest through the rear of the seat squab and remove the cover from the seat.
Remove the rear shelf securing screws **(1 Fig** 2), reposition the rear seat belts (where fitted).
Remove the rear parcel tray **(2** Fig 2).
Unclip and remove the air extraction vents from the tray.
Discard the tray.
Reverse the removal procedure to refit the tray.

1669B/80

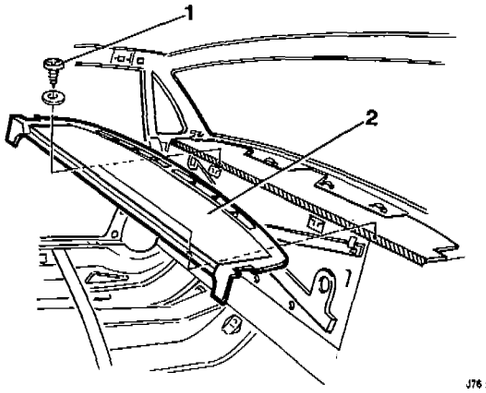


Fig 2

REAR QUARTER UPPER TRIM PAD LEFT HAND

RENEW **76.13.13**

Open the door.
Remove the rear seat belt upper anchorage bolt cover and bolt.
Displace the upper portion of the seat belt and collect the spacer.
Remove the trim pad securing screw and coat hanger hook.
Slacken but do not remove the dowager strap securing screws.
Unclip the rear quarter trim pad (Fig 1) and remove.
Reverse the removal procedure to refit.

0005b

REAR QUARTER UPPER TRIM PAD RIGHT HAND

RENEW **76.13.43**

Open the door.
Remove the rear seat belt upper anchorage bolt cover and bolt.
Displace the upper portion of the seat belt and collect the spacer.
Remove the trim pad securing screw and coat hanger hook.
Slacken but do not remove the dowager strap securing screws.
Unclip the rear quarter trim pad and remove.
Reverse the removal procedure to refit.

0008b

STEERING COLUMN UPPER COWL

RENEW **76.46.02**

Open the door.
Centralise the road wheels and remove the ignition key.
Remove the pad from the centre of the steering wheel.
Slacken the nut (1 Fig 2) securing the wheel (2 Fig 2) to the shaft, do not fully remove.
Pull steering wheel to release from the shaft, remove the securing nut and steering wheel.
Release the steering column adjuster bar and raise the column to its uppermost position.
Remove the screws securing the upper cowl (4 Fig 2) and remove.
Position the cowl and secure with the screws.
Apply grease to the split collars and fit to the steering shaft.
Ensuring that the steering wheel is in the straight ahead position fit to the shaft.
Fit and tighten the securing nut.
Refit the steering wheel pad.
Close the door.

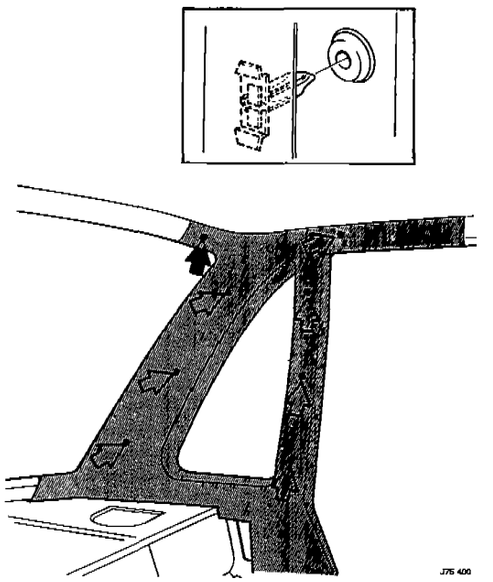


Fig 1

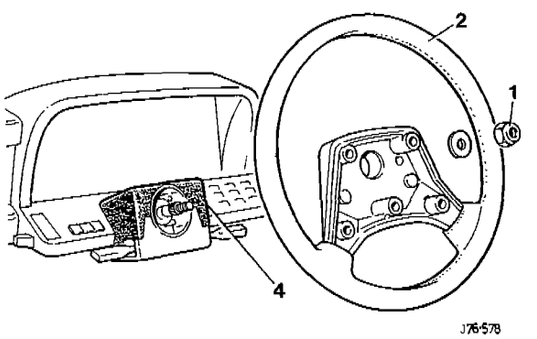


Fig 2

TORQUE FIGURES

Steering wheel to steering shaft ***35-45Nm***

OILS/GREASES

Split *collars to shaft* ***Castrol L M Grease.***

SPANNER SIZES

24mm

1669B/78

STEERING COLUMN LOWER COWL

RENEW **76.46.03**

Open the door.
Centralise the road wheels and remove the ignition key.
Remove the pad from the centre **of** the road wheel.
Slacken the nut (**1** Fig **1**) securing the wheel (2 Fig **1**) to the shaft, do not fully remove.
Pull steering wheel to release from the shaft, remove the securing nut and steering wheel.
Remove the dimmer knob control.
Remove the screws securing the lower cowl (4 Fig 1), remove the cowl.
Refit the replacement cowl and secure with the screws.
Refit the dimmer control knob.
Remove the screws securing the upper cowl and remove.
Position the cowl and secure with the screws.
Apply grease to the split collars and fit to the steering shaft.
Ensuring that the steering wheel is in the straight ahead position fit to the shaft.
Fit and tighten the securing nut.
Refit the steering wheel pad.
Close the door.

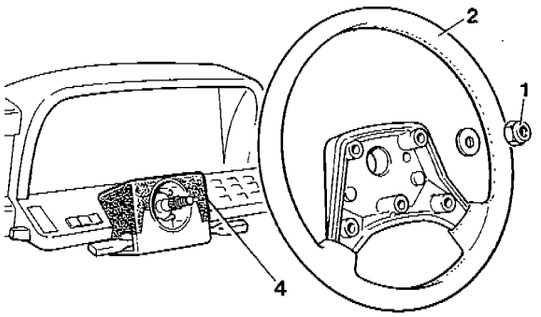


Fig 1

TORQUE FIGURES

Steering wheel ***to*** *steering* ***shaft*** **35-45 ''**

OILS/GREASES

Split collars ***to shaft*** ***Castrol LM Grease.***

1669B/78

ILLUMINATED SUNVISOR MIRROR ASSY

RENEW **76.10.50**

Open the bonnet and disconnect the battery.
Lower the sunvisor.
Raise the sunvisor cover and remove the lenses.
Remove the screws securing the mirror to the sunvisor and discard the mirror.
Reverse the removal procedure to fit the replacement mirror.

0051G

ILLUMINATED SUNVISOR ASSY

RENEW **76.10.48**

Open the bonnet and disconnect the battery.
Lower the sunvisor.
Remove the screws (Fig 1) securing the sunvisor retaining block.

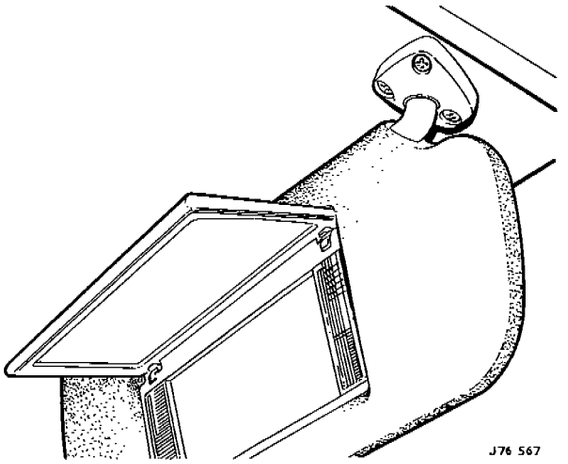


Fig 1

Carefully displace the connector from behind the headlining and disconnect.
Remove the screws securing the retaining block and remove the block.
Reverse the removal procedure to refit the replacement visor.

0051G

ASHTRAY

RENEW **76.67.13**

Open the door, press the flap to open the ashtray.
Lift out the ash receptacle, replace the receptacle, close the lid and shut the door.

0380b

RADIO CONSOLE

RENEW **76.25.15**

Open the door.
Remove the console ashtray 76.67.18
Remove the console finisher 76.25.19
Remove the radio console to centre console securing screws and carefully remove the radio fascia plate.
Reposition the radio console from its mounted position, disconnect the block connectors and remove the radio console assembly.
Remove the air conditioning switch control module 86.80.15
Remove the console switch and clock module 86.80.13 and place the housing aside.
Reverse the removal procedure to refit the console.

0012b

FRONT BEAM COVER

RENEW **76.22.28**

Remove the front bumper centre section and remove the indicator lamp assemblies.
Remove the rubber cover securing screws, remove the lower cover securing screws and remove the cover.
Fit the replacement cover to the centre blade and align the lower fixing holes.
Fit but do not tighten the lower securing screws, align the cover to centre blade securing bracket holes and fit and tighten the upper securing screws.
Tighten the lower securing screws.
Refit the centre blade and indicator lamp assemblies.

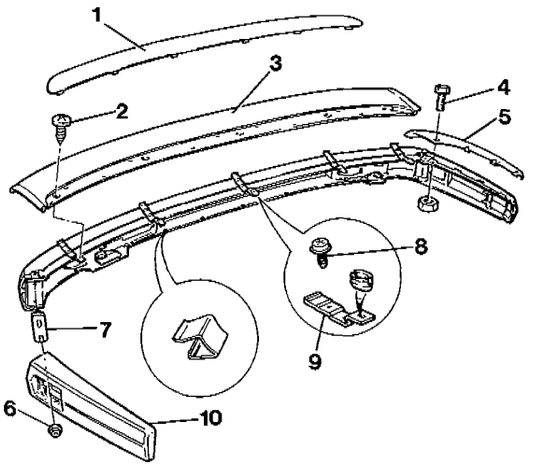


Fig 1 J76 350

DATA

TORQUE FIGURES

Bumper mounting brackets to body (Non Federal) 23-27Nm
Bumper mounting struts to body (Federal) 23-27Nm
Bumper to bumper bracket (Non Federal) 40-50Nm
Bumper to bumperstrut (Federal) 40-50Nm
Guide block to mounting bracket 3.5-4.75Nm
Horns to bracket 22-28Nm
Mounting bracket guide block to body 7.5-10Nm

SPANNER SIZES

8mm
10mm
13mm
19mm
No 20 Torx

0385b

REAR BEAM COVER

RENEW **76.22.29**

Remove the rear fog and rear marker lamps (where fitted) from the rear bumper and remove the rear bumper complete.
Remove the quarter blade securing bolts and nuts (both sides) (4 Fig 1) and remove the quarter blades (5 Fig 1).
Remove the rubber cover securing screws and remove the cover (Fig 2).
Fit the replacement cover to the bumper and secure with the screws.
Refit the quarter blades and secure with the bolts and nuts, refit the rear bumper to the vehicle complete and refit the rear fog and marker lamps (where fitted).

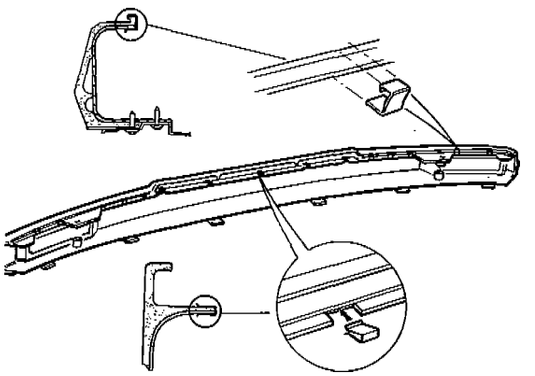


Fig 2 J76 379

DATA

TORQUE FIGURES

Bumper mounting brackets to body (Non Federal) ***23-27Nm***
Bumper mounting struts to body (Federal) ***23-27Nm***
Bumper ***to*** *bumper bracket (Non Federal)* ***40-50Nm***
Bumper to body inner (Federal) ***23-27Nm***
Bumper to fixings bumper beam (Federal) ***39-50Nm***
Bumper to body inner (Non Federal) ***23-27Nm***
Bumper to fixings bumper beam ***(Non*** *Federal)* ***39-50Nm***
Guide block ***to*** *mounting bracket* ***3.5-4.75Nm***
Mounting bracket guide ***block*** *to body* ***7.5-10Nm***

SPANNER SIZES

8mm
10mm
13mm
17mm
19mm

No *20* ***Torx***

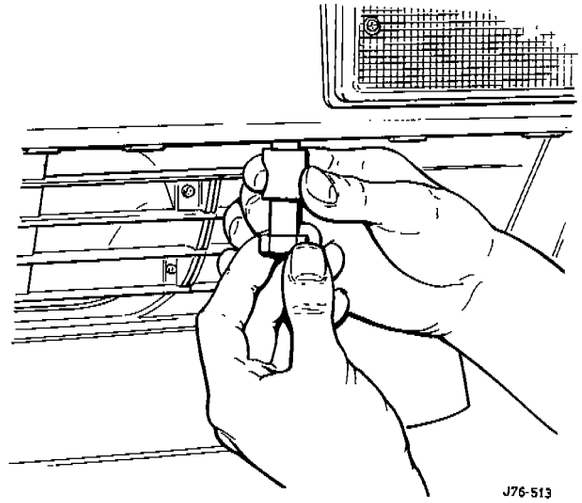


Fig 1

0376b

FRONT BEAM

RENEW **76.22.26**

Remove the front beam securing bolts (Fig 1).
Remove the spacers.
Displace the beam assembly for access to the lamp assembly block connectors.
Disconnect the block connectors (Fig 2).
Remove the beam assembly.
Remove the blade trim finishers.
Remove the blade securing screws.
Remove the blade.
Remove the blade mounting brackets.
Remove the side lamp assemblies.
Remove the quarter bumper assemblies.
Remove the beam cover securing clips.
Remove the beam cover.

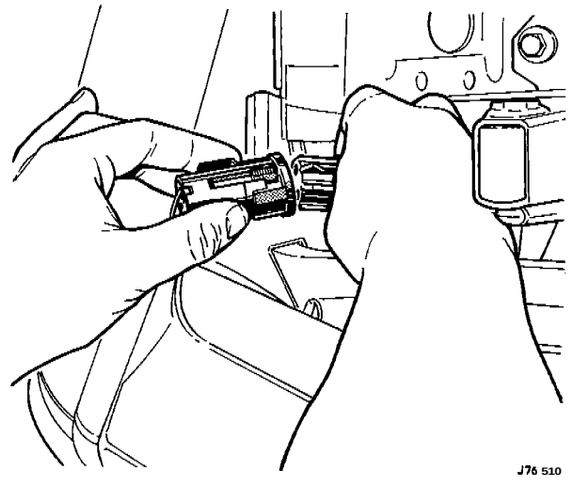


Fig 2

Fit the beam cover to the replacement beam.
Fit and seat the beam cover securing clips.
Refit the quarter bumpers.
Refit the side lamp assemblies.
Refit the bumper blade mounting brackets.
Refit the bumper blade, fit and align the screws, and finally tighten all the screws.
Refit the blade trim finisher.
Fit the beam assembly to the mounting struts.
Reconnect the block connectors.
Fit and tighten the beam assembly securing bolts.

DATA

TORQUE FIGURES

Bumper front blade to beam ***5-7Nm***
Bumper mounting brackets ***to*** *body (Non Federal)* ***23-27Nm***
Bumper ***to*** *bumper bracket (Non Federal)* ***40-50Nm***
Bumper *to* ***bumper strut*** *(Federal)* ***40-50Nm***
Mounting bracket guide block ***to*** *body* ***7.5-10Nm***
Bumper to fixings bumper beam ***39-50Nm***

SPANNER SIZES

8mm
10mm
13mm
No 20 Torx

REAR BEAM

RENEW 76.22.27

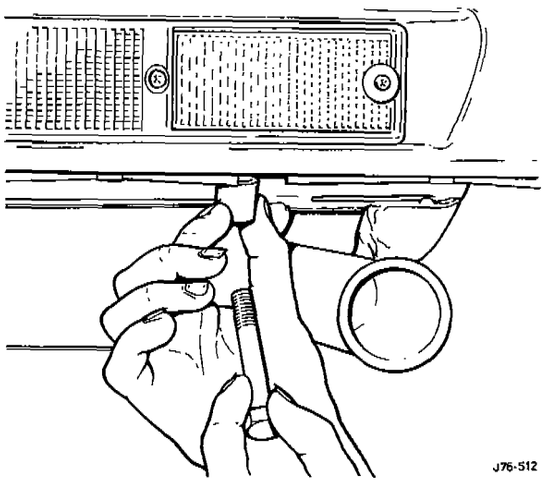


Fig 1

Open the boot.
Remove the rear fog guard lamps.
Remove the rear beam securing bolts (Fig 1).
Remove the spacers (Fig 1).
Remove the beam assembly.
Remove the blade trim finishers.
Remove the blade securing screws.
Remove the blade.
Remove the blade mounting brackets.
Remove the quarter bumper assemblies.
Remove the beam cover securing clips.
Remove the beam cover.

Fit the beam cover to the replacement beam.
Fit and seat the beam cover securing clips.
Refit the quarter bumpers.
Refit the bumper blade mounting brackets.
Refit the bumper blade, fit and align the screws, and finally tighten all the screws.
Refit the blade trim finisher.
Fit the beam assembly to the mounting struts.
Fit and tighten the beam assembly securing bolts.
Refit the rear fog guard lamps.
Close the boot.

DATA

TORQUE FIGURES

Bumper blade to beam ***5-7Nm***
Bumper mounting brackets to body (Non Federal) ***23-27Nm***
Bumper ***to*** *bumper bracket (Non Federal)* ***40-50Nm***
Bumper to bumper strut (Federal) ***40-50Nm***
Mounting bracket guide block to body ***7.5-10Nm***
Bumper to fixings bumper beam ***39-50Nm***

SPANNER SIZES

8mm
10mm
13mm
No *20 Torx*

REAR BLIND

RENEW **76.10.19**

Open both rear doors.
Remove the rear seat cushion 76.70.37.
Remove the rear seat squab 76.70.38.
Remove the rear parcel tray 76.67.06.
Remove the nuts securing the rear sunblind to the parcel shelf and discard the blind.
Reverse the removal procedure to refit the replacement rear blind.

0051G

AUTOMATIC GEARBOX SELECTOR TRIM FINISHER

RENEW **76.25.07**

Remove the gearbox sport mode switch 86.65.84.
Remove the gearbox sport mode switch finisher 76.25.09.

Displace and remove the trim finisher (Fig 1).
Reverse the removal procedure to refit the replacement trim finisher.

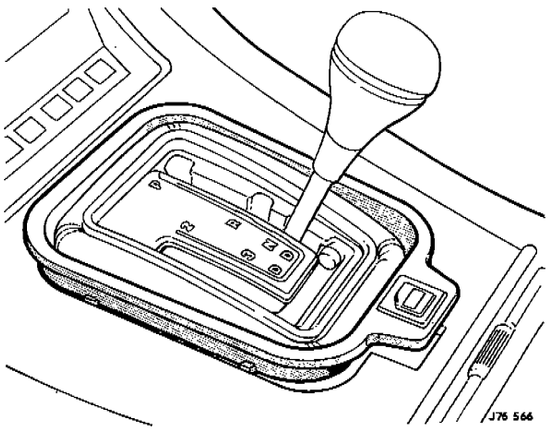


Fig 1

0051G

GEARBOX SPORT MODE SWITCH FINISHER

RENEW **76.25.09**

Remove the gearbox sport mode switch
86.65.84
Carefully displace and remove the finisher.

Reverse the removal procedure to fit the replacement finisher.

0051G

REAR DOOR OUTER HANDLE OPERATING ROD

ADJUST **76.37.11**

Remove the rear door trim panel veneer panel 76.47.12
Remove the door upper trim pad 76.34.05
Remove the rear door lower trim pad 76.34.06

Remove the plastic moulding.
Reposition the plastic waether shield for access and remove the outer handle operating rod adjuster peg retaining peg and reposition the rod from the retaining clip.
Depress the latch lever until the release hammer just contacts the release peg, reposition the operating rod into the retaining clip whilst still holding the latch lever down.
Fit and seat the retaining clip peg and close the door.
Check the operation of the lock and outer handle.
Open the door.
Align and fit the plastic moulding and reverse the remaining removal procedure to assemble the door.

0051G

FRONT DOOR OUTER HANDLE OPERATING ROD

ADJUST 76.37.10

Remove the rear door trim panel veneer panel 76.47.1 **1**
Remove the door upper trim pad 76.34.02
Remove the front door lower trim pad 76.34.03
Remove the plastic moulding.
Reposition the plastic waether shield for access and remove the outer handle operating rod adjuster peg retaining peg and reposition the rod **from** the retaining clip.
Depress the latch lever until the release hammer just contacts the release peg, reposition the operating **rod** into the retaining clip whilst **still** holding the latch lever down.
Fit and seat the retaining clip **peg** and close the door.
Check the operation of the lock and outer handle.
Open the door.
Align and fit the plastic moulding **and** reverse the remaining removal procedure to assemble the door.

0051G

INSTRUMENT PANEL VENEER PANEL

RENEW 76.47.24

Disconnect the battery.
Remove the drivers side dash liner 76.46.11
Remove the instrument housing 88.20.13
Place suitable protection on a bench and position the instrument panel face down on the protection.
Release the retaining clips securing the rear half of the instrument pack and pivot down for access.
Remove the warning lamp bulbs adjacent to the instrument pack hinges for access to the screws.
Carefully reposition the flexible circuit board for access to the upper veneer panel securing screws.
Remove the upper screws securing the veneer panel.
Disconnect the flexible circuit board connector from the LCD unit.
Remove the screws securing the veneer panel to the LCD unit.
Remove the remaining screws securing the veneer panel to the instrument pack.
Remove the clips securing the panel lens to the instrument pack and remove the lens.
.Carefully remove the veneer panel from the instrument pack.
NOTE: Do not lay the insrtument pack on the gauge faces.
Reverse the removal procedure to refit the replacement veneer panel.

0051G

PASSIVE RESTRAINT SYSTEM (USA ONLY)

DESCRIPTION

76.73.00

The passive restraint system is similar in design to the type fitted to the **XJS.** The passive belt is a single diagonal belt, fed from an inertia reel assembly mounted on the seat slide (centre console side) to a motorised runner slotted in a guide rail, attached to the cantrail. A quick release buckle for emergency use is located at the cantrail end of the belt.

An independent second belt (inertia reel lap type) to be used in conjunction with the passive belt is fitted, and must be manually secured by the occupant.

The Passive belt is driven by a motor and winch assembly mounted in the BC post – one to the **LH** side and one to the RH side of the vehicle. The system is controlled by an ECU mounted above the driver's side dash liner.

The seat belt warning on the VCM and a separate warning light located on the fascia below the hazard warning switch indicate that the driver's passive belt is not located in the restraining position. Also in operation is a six second audible warning.

OPERATION

The system is actuated when the **doors** are closed and the ignition is turned to position II. Both seat belt warning lights will remain illuminated until the driver's passive (automatic) belt is located in the restraining position; the audible warning, once started, will continue for six seconds.

Both driver and passenger belt should operate simultaneously even when the passenger seat is unoccupied. This will ensure that the passenger door mirror is not obscured by the belt.

The passive belt deploys automatically to the unrestraining position when the ignition key is turned to position **I or** OFF, or when the adjacent door is opened. However, with reverse gear selected, should the driver's door **be** opened (to aid driver vision) the belt is prevented from travelling to the unrestraining position, thereby avoiding the possibility of entangling the leaning driver.

A further safety feature of the system is its connection with the inertia switch. If the inertia switch is tripped with the ignition ON, no movement of the passive belt will occur. In addition, the doors will be unlocked.

To prevent the occupant from being trapped in the vehicle in the event of a road accident, the buckle at the shoulder end **of** the belt can be released by operating the red button marked 'PRESS'.
WARNING: **IF** THE BELT **IS** RELEASED FOR ANY REASON, IT **MUST** BE RECONNECTED **BEFORE** THE VEHICLE **IS** DRIVEN AGAIN.

In the unlikely event of a malfunction of the deployment system, two emergency tongues with protective covers are stored in the glovebox to allow temporary use of the vehicle.

The tongues are right and left handed and marked RH TOP and LH TOP respectively. Insert the correct tongue into the trim finisher channel on the **B** post, sliding it down until it engages with the assembly anchorage at the end of the runner rail. Release the diagonal seat belt buckle from the runner/tongue assembly by operating the red 'PRESS' button, and manually attach the buckle to the emergency tongue. Fit the protective cover to the exposed runner/tongue assembly.

Due to the sensitivity of the belt inertia reels, rapid or jerky seat adjustment may cause them to **lock,** preventing the system from deploying completely. It is preferable to adjust the seat after the belt has deployed to the restraining position. If the inertia reel mechanism is locked, slowly adjust the seat forwards and ease the belt from the inertia reel or use the emergency release. Ensure the belt is re-connected before the vehicle is driven. Labels refering to the above are attached to the sunvisor and belt webbing.

OPTIONS FOR USE ON EARLY VEHICLES

Incorporation of the passive restraint system necessitates modification at the body-in-white stage of construction. Fitment of the passive restraint system will not be possible therefore, to vehicles manufactured before 1st June 1988. Additionally the front seat slides have been made narrower to accommodate the passive restraint reels, and consequently seat slides are not interchangeable with the preceding type.

MAIN MECHANICAL COMPONENTS

Component	Location
Rail and seal	A post and cantrail
Motor, cable and anchorage	B-C post
Kit, emergency tongue	Convenient place e.g. glove box
Passive belt reel and buckle	Seat slides
Lap belt and buckle (matched pair)	Seat slides

MAIN ELECTRICAL/ELECTRONIC COMPONENTS

Component	Location
Electronic control unit with a PM4 and PMHD conector	Behind drivers dash liner
Reverse inhibit relay (green)	Behind driver's dash liner attached to blower casing
Warning light	Instrument pack, LHS
Rear dock and proximity switch	B-C post, fitted to anchorage
Front (limit) dock switch	In motor drive assembly in BC post
Motor and drive connector (PM4)	Bottom of BC post
Door pillar switch	On A post combined with courtesy light switch
Power pick-up points: two 20 A fuses	LH and RH fusebox – Fuse 9

FAULT DIAGNOSIS AND MAINTENANCE CHECKS 76.73.00

WARNING: SHOULD THE SEAT OR SEAT SLIDES BE REMOVED FOR ANY REASON, UPON REASSEMBLY CHECK FOR CORRECTSEAT BELTOPERATION

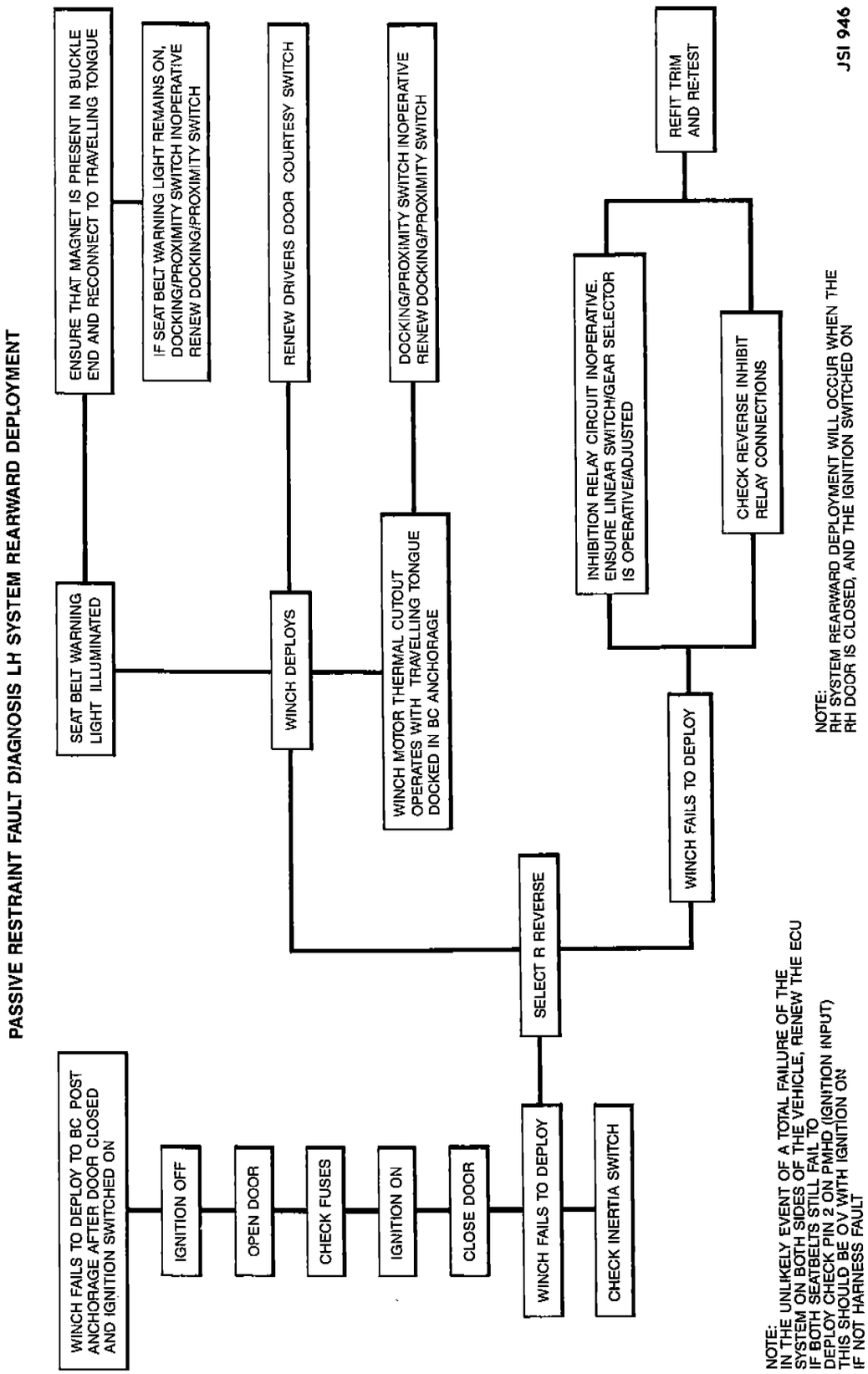
MECHANICALSYSTEM

Fault	Cause	Action
Seat belt Installation		
Belt inoperative	Damageto reels Loose reel bolt Inadequatekick plate	Renew reels Check security of all bolts/kick plates retention
Faulty belt operation	Foulingof webbing on carpet/cross member/ rnounting bracket Incorrectreel/slide/ buckle assy	Check routing of belt Check/renew components
Webbing wear/fray	Foulingof webbing on carpet/cross member/ mounting bracket Incorrectreel/slide/ buckle assy or damage to webbing guide	Check routing of bett Check/renew components Check/renew webbing guide
Unableto assemble seats into car	Bucklefouling cushion, buckle crankedtoo far over towards centre line of car	Check/adjust position of buckle Check dimensions of bucklesupportarm
Motor Anchorage		
Failure of motor – system inoperative	Worn motor casings Motor casing damaged or boltfailure	Check/renew casings and bolts
Rattles – customer annoyance	Inadequatebolt retention or failure	Check security of all bolts/kick plates/ fixings
B-C post anchorage unit		
Warning light inoperative	Electrical cable severed	Repair/renew cable
Proximity switch inoperative	Electrical cable severed	Repair/renew cable
System inoperative	Broken drive cable Drive cable kinked or excessive cable length	Renewmotor/winch assy
Anchorage loose	Anchorage bolts loose	Check security of all bolts/fixings
Rail (cantrail) to A post		
Seal sags, gap between rail and body	Loose fixing screws and seal fixings	Check security of all fixings
System inoperative/ travelling tongue jammed	Bend radiustoo tight at BC post	Adjust/reposition rail, renew if necessary

Fault	Cause	Action
BC post finisher		
System inoperative	Loose finisher, fouls travelling tongue	Check security of finisher fixings
Brushes, inner and outer		
Eventual failure	Excess friction – incorrect assy of system, dust ingress	Assemble system correctly Clean out system
	Inadequate retention of brush strip carrier	Check security of fixings
Fouls travelling tongue	Brushes adrift from BC post	Check security of fixings
A post/cantrail finisher		
System inoperative	Structural failure or deformation	Renew finisher
Fouls travelling tongue	Trim lifting from moulding	Repair/renew finisher
Dash Liner		
Brackets loose	Bracket fixings	Inadequate retention
Armature falls off, rattles	Armature fixings	Service loads in excess of design loads
Inadequate retention		

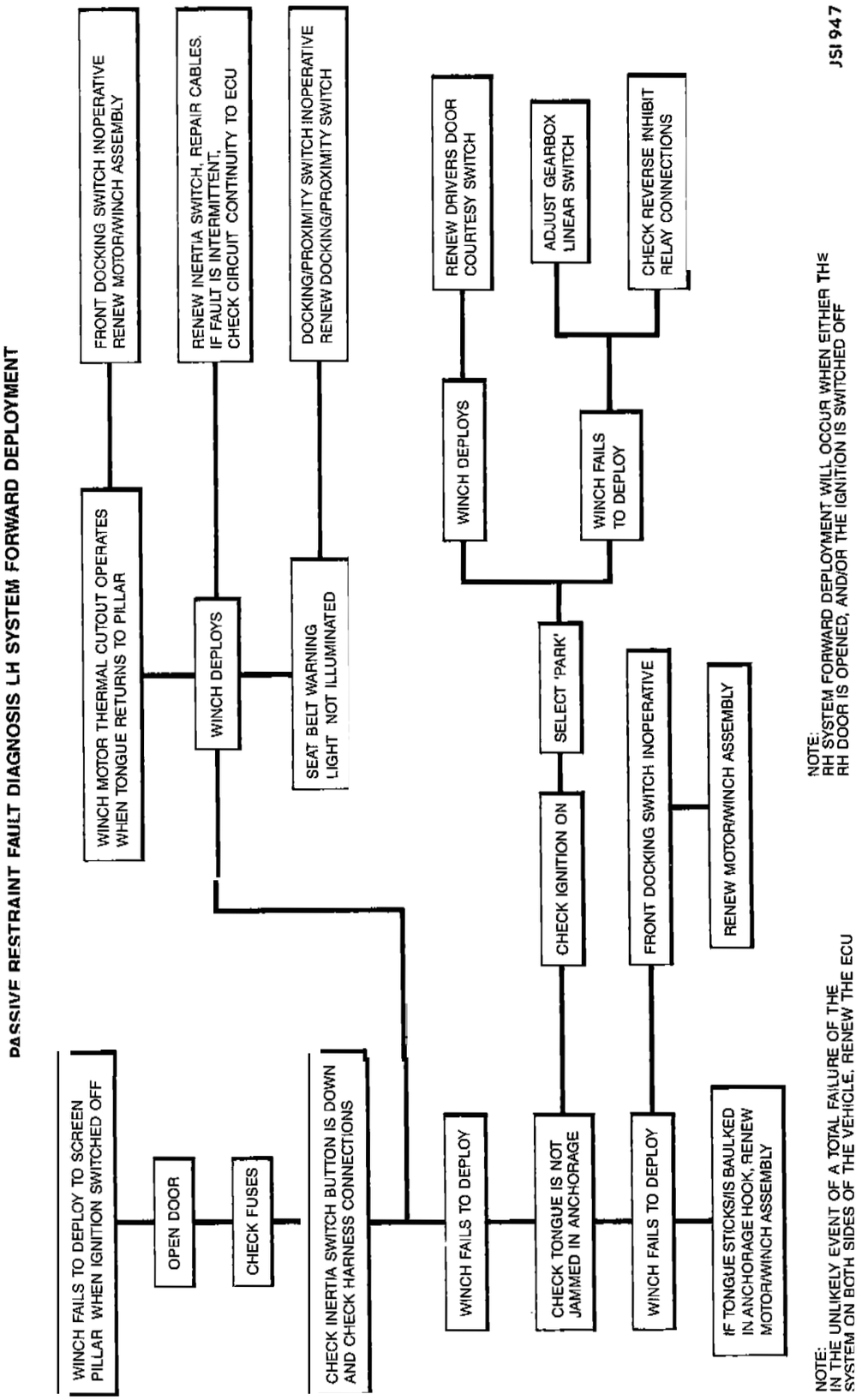
ELECTRICAL SYSTEM

FAULT DIAGNOSIS LH SYSTEM REARWARD DEPLOYMENT


PASSIVE RESTRAINT FAULT DIAGNOSIS LH SYSTEM REARWARD DEPLOYMENT
WINCH FAILS TO DEPLOY TO BC POST ANCHORAGE AFTER DOOR CLOSED AND IGNITION SWITCHED ON
IGNITION OFF
OPEN DOOR
CHECK FUSES
IGNITION ON
CLOSE DOOR
WINCH FAILS TO DEPLOY
CHECK INERTIA SWITCH
SELECT R REVERSE
SEAT BELT WARNING LIGHT ILLUMINATED
WINCH DEPLOYS
ENSURE THAT MAGNET IS PRESENT IN BUCKLE END AND RECONNECT TO TRAVELLING TONGUE
IF SEAT BELT WARNING LIGHT REMAINS ON, DOCKING/PROXIMITY SWITCH INOPERATIVE RENEW DOCKING/PROXIMITY SWITCH
RENEW DRIVERS DOOR COURTESY SWITCH
WINCH MOTOR THERMAL CUTOUT OPERATES WITH TRAVELLING TONGUE DOCKED IN BC ANCHORAGE
DOCKING/PROXIMITY SWITCH INOPERATIVE RENEW DOCKING/PROXIMITY SWITCH
WINCH FAILS TO DEPLOY
INHIBITION RELAY CIRCUIT INOPERATIVE. ENSURE LINEAR SWITCH/GEAR SELECTOR IS OPERATIVE/ADJUSTED
CHECK REVERSE INHIBIT RELAY CONNECTIONS
REFIT TRIM AND RE-TEST
NOTE:
IN THE UNLIKELY EVENT OF A TOTAL FAILURE OF THE SYSTEM ON BOTH SIDES OF THE VEHICLE, RENEW THE ECU
IF BOTH SEATBELTS STILL FAIL TO DEPLOY CHECK PIN 2 ON PMHD (IGNITION INPUT) THIS SHOULD BE 0V WITH IGNITION ON IF NOT HARNESS FAULT
NOTE:
RH SYSTEM REARWARD DEPLOYMENT WILL OCCUR WHEN THE RH DOOR IS CLOSED, AND THE IGNITION SWITCHED ON
JSI 946

ELECTRICAL SYSTEM

FAULT DIAGNOSIS LH SYSTEM FORWARD DEPLOYMENT


PASSIVE RESTRAINT FAULT DIAGNOSIS LH SYSTEM FORWARD DEPLOYMENT
WINCH FAILS TO DEPLOY TO SCREEN PILLAR WHEN IGNITION SWITCHED OFF
OPEN DOOR
CHECK FUSES
CHECK INERTIA SWITCH BUTTON IS DOWN AND CHECK HARNESS CONNECTIONS
WINCH MOTOR THERMAL CUTOUT OPERATES WHEN TONGUE RETURNS TO PILLAR
FRONT DOCKING SWITCH INOPERATIVE RENEW MOTOR/WINCH ASSEMBLY
WINCH DEPLOYS
RENEW INERTIA SWITCH, REPAIR CABLES. IF FAULT IS INTERMITTENT, CHECK CIRCUIT CONTINUITY TO ECU
SEAT BELT WARNING LIGHT NOT ILLUMINATED
DOCKING/PROXIMITY SWITCH INOPERATIVE RENEW DOCKING/PROXIMITY SWITCH
WINCH FAILS TO DEPLOY
WINCH DEPLOYS
RENEW DRIVERS DOOR COURTESY SWITCH
SELECT 'PARK'
WINCH FAILS TO DEPLOY
ADJUST GEARBOX LINEAR SWITCH
CHECK IGNITION ON
CHECK TONGUE IS NOT JAMMED IN ANCHORAGE
CHECK REVERSE INHIBIT RELAY CONNECTIONS
FRONT DOCKING SWITCH INOPERATIVE
WINCH FAILS TO DEPLOY
RENEW MOTOR/WINCH ASSEMBLY
IF TONGUE STICKS/IS BAULKED IN ANCHORAGE HOOK, RENEW MOTOR/WINCH ASSEMBLY
NOTE:
IN THE UNLIKELY EVENT OF A TOTAL FAILURE OF THE SYSTEM ON BOTH SIDES OF THE VEHICLE, RENEW THE ECU
NOTE:
RH SYSTEM FORWARD DEPLOYMENT WILL OCCUR WHEN EITHER THE RH DOOR IS OPENED, AND/OR THE IGNITION IS SWITCHED OFF
JSI 947

PASSIVE RESTRAINT ECU OPERATIONAL TEST *76.73.00*

The following procedure is designed to test the operation of the passive restraint ECU. Carry out each test in sequence in the order given below. If the system does not function in the manner described, refer to Jaguar Diagnostic System to locate the fault.

1 Enter car (drivers seat). Close and lock both front doors. Operate inertia switch. Doors will remain locked.

2 Insert key into ignition. Seatbelt will remain at A post.

3 Turn ignition on (position 2). Seatbelt will remain at A post.

4 Turn ignition off (position 0). Reset inertia switch. Turn ignition on (position 2). Both seatbelts will deploy to B post. 'Seatbelt not fitted' warning will activate until drivers seatbelt latches in B post.

5 Open drivers door. Drivers seatbelt will retract to A post.

6 Open passenger door. Passenger seatbelt will retract to A post.

7 Close drivers door. Drivers seatbelt will deploy to B post.

8 Close passenger door. Passenger seatbelt will deploy to B post.

9 Turn ignition *off* (position 0). Both seatbelts will retract to A post.

10 Turn ignition on (position 2). Both seatbelts will deploy to B post. Lock doors. Operate inertia switch. Doors will unlock. NOTE: It is necessary to detect the logic output from pin 1 LB86. Output should be logic 0.

11 Open drivers door. Drivers seatbelt will remain at B post.

12 Open passenger door. Passenger seatbelt will remain at B post.

13 Close both doors. Turn ignition off (position 0). Seatbelts will remain at B post.

14 Reset inertia switch. Seatbelts will retract to A post.

15 Turn ignition on (position 2). Detach drivers seatbelt from guide rail carrier. Seatbelt warning will activate.

16 Re-connect seatbelt to carrier. Seatbelt warning will de-activate.

17 End of test.

PASSIVE RESTRAINT ECU LOGIC 76.73.00

Truth tables have been provided for information and to aid diagnostic work. The following notes are also relevant.

1 With ignition on (position 2) and reverse gear selected, the drivers door switch input is inhibited.

2 The ECU must be capable of detecting an inertia switch operation with ignition 'on' AND 'off.

3 The ECU must be capable of discriminating between an inertia switch operation and 'ignition off.

4 Where'indicated thus '*' logic input can be either 'logic 1' or 'logic 0'; i.e. the output state described is not dependant upon that particular input.

– This combination of logic can only occur under fault conditions.

SEATBELT WARNING TRUTH TABLE

L.H CHANNEL R H CHANNEL	SKT 4 SKT 15	SKT 8 SKT 13	SKT 7 SKT 14	SKT 6	SKT 10	SKT 2	SKT 3
FUNCTION	DOOR SWITCH	REAR DOCK	FRONT DOCK	INERTIA SWITCH	BELT PROX	IGN. SWITCH	OUTPUT LOGIC
	●	0	★	*	0	0	LOW
	●	0	★	*	0	1	HIGH
	★	0	★	*	1	0	LOW
	*	0	●	★	1	1	HIGH
	●	1	★	*	0	0	LOW
	★	1	*	★	0	1	HIGH
	*	1	*	●	1	0	HIGH
	●	1	★	*	1	1	HIGH

RUN TO FRONT TRUTH TABLE

L.H. CHANNEL R H. CHANNEL	SKT 4 SKT 15	SKT 8 SKT 13	SKT 7 SKT 14	SKT6	SKT 10	SKT 2	PIN 2 PIN 5	PIN 3 PIN 6
FUNCTION	DOOR SWITCH	REAR DOCK	FRONT DOCK	INERTIA SWITCH	BELT PROX	IGN. SWITCH	OUTPUT VOLTAGE	
	0	*	0	0	★	0	0V	12V
	0	*	0	0	*	1	0V	12V
	0	●	0	1	*	0	0V	0V
	0	●	0	1	★	1	0V	0V
	0	*	1	0	★	0	0V	0V
	0	●	1	0	★	1	0V	0V
	0	*	1	1	*	0	0V	0V
	0	*	1	1	★	1	0V	0V
	1	●	0	0	★	0	0V	0V
	1	★	0	0	★	1	0V	12v
	1	*	0	1	★	0	0V	0V
	1	*	0	1	★	1	0V	0V
	1	*	1	0	★	0	0V	0V
	1	*	1	0	★	1	0V	0V
	1	●	1	1	★	0	0V	0V
	1	★	1	1	★	1	0V	0V

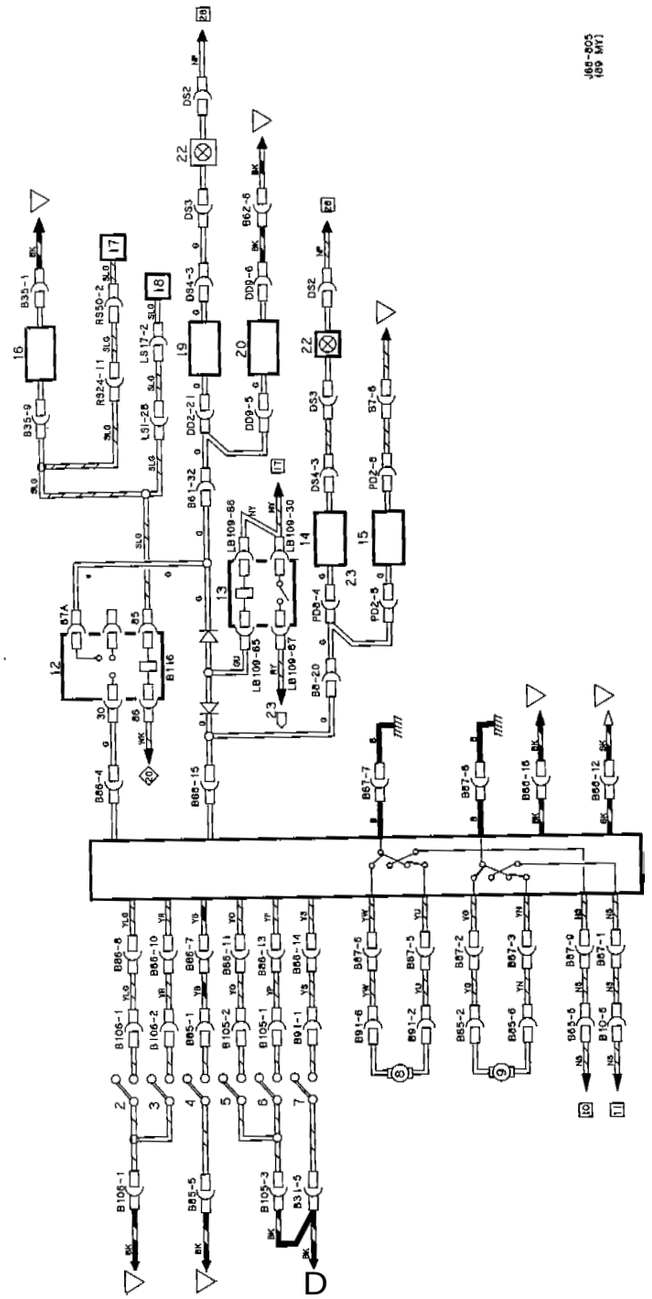
RUN TO REAR TRUTH TABLE

L.H. CHANNEL R.H. CHANNEL	SKT 4 SKT 15	SKT 8 SKT 13	SKT 7 SKT 14	SKT 6	SKT 10	SKT 2	PIN 2 PIN 5	PIN 3 PIN 6
FUNCTION	DOOR SWITCH	REAR DOCK	FRONT DOCK	INERTIA SWITCH	BELT PROX	IGN. SWITCH	OUTPUT VOLTAGE	
	0	0	★	0	★	0	0V	0V
≠	0	0	★	0	★	1	0V	0V
	0	0	★	1	★	0	0V	0V
	0	0	★	1	★	1	0V	0V
	0	1	★	0	★	0	0V	0V
≠	0	1	★	0	★	1	0V	0V
	0	1	★	1	★	0	0V	0V
	0	1	★	1	★	1	0V	0V
	1	0	★	0	★	0	12V	0V
≠	1	0	★	0	★	1	0V	0V
	1	0	★	1	★	0	0V	0V
	1	0	★	1	★	1	0V	0V
	1	1	★	0	★	0	0V	0V
≠	1	1	★	0	★	1	0V	0V
	1	1	★	1	★	0	0V	0V
	1	1	★	1	★	1	0V	0V

CENTRAL LOCKING TRUTH TABLE

L H CHANNEL R H CHANNEL	SKT 4 SKT 15	SKT 8 SKT 13	SKT 7 SKT 14	SKT 6	SKT 10	SKT 2	SKT 1
FUNCTION	DOOR SWITCH	REAR DOCK	FRONT DOCK	INERTIA SWITCH	BELT PROX	IGN SWITCH	OUTPUT LOGIC
	★	★	★	0	★	0	HIGH
	★	★	★	0	★	1	HIGH
	★	★	★	1	★	0	LOW
	★	★	★	1	★	1	HIGH

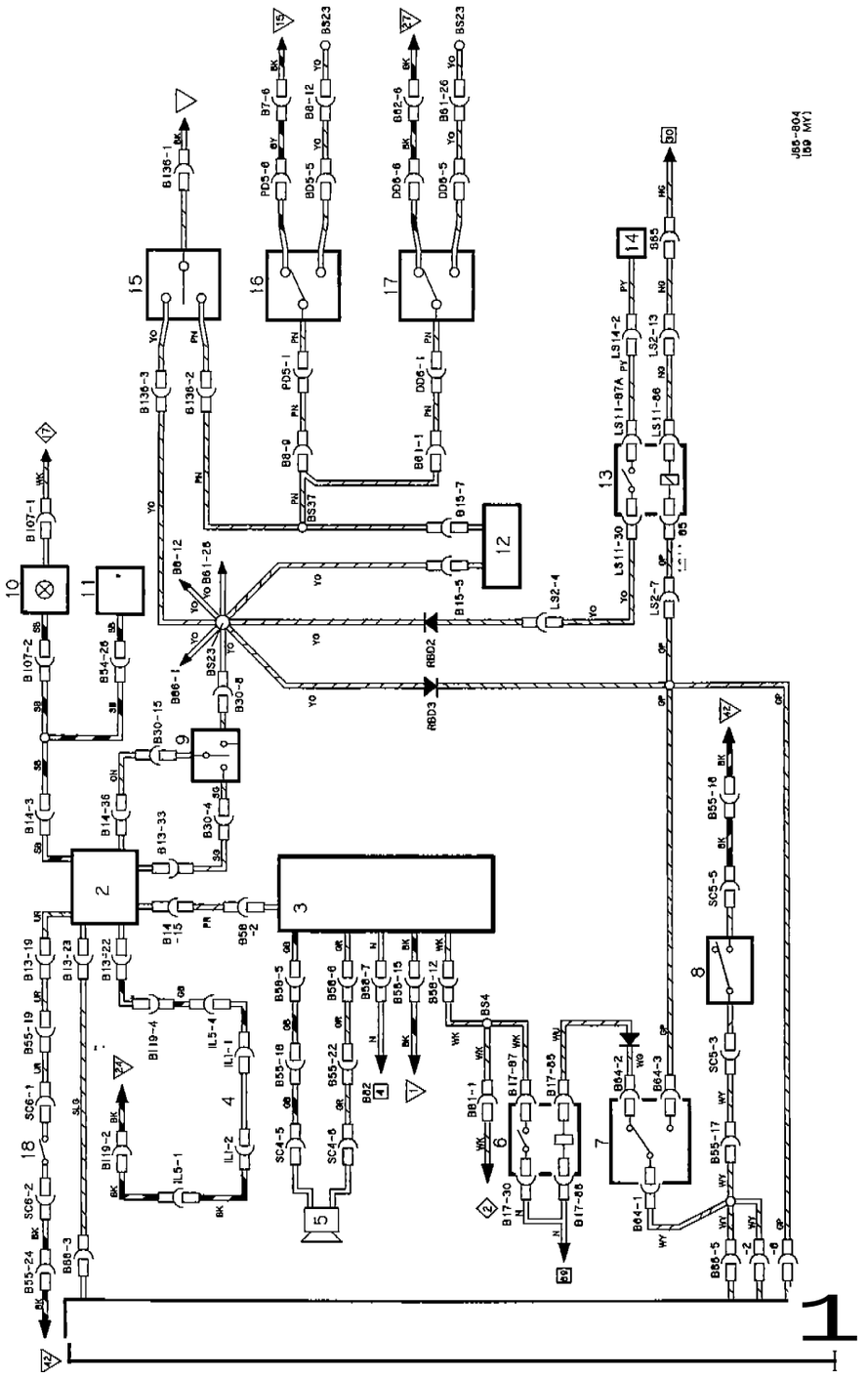
PASSIVE RESTRAINT WIRING DIAGRAM



Key to diagram

1 Passive ECU
2 LH Rear dock switch
3 LH Belt proximity switch
4 LH Front dock switch
5 RH Belt proximity switch
6 RH Rear dock switch
7 RH Front dock switch
8 RH Motor
9 LH Motor
10 RH Fusebox fuse 9
11 LH Fusebox fuse 9
12 Reverse light inhibit relay
13 Seat adjust relay
14 Passenger door panel
15 Front passenger door switch
16 Auto gear select switch
17 RH rear bulb fail module
18 LH rear bulb fail module
19 Drivers door panel
20 Drivers door switch
21 Passenger door light
22 Drivers door light
23 To Drivers seat relay

PASSIVE RESTRAINT WARNING CIRCUIT WIRING DIAGRAM



Key to Diagram

1 Passive ECU
2 CPU
3 Audible warning module
4 Drivers seat pad switch
5 Audible warning buzzer
6 Ignition on relay
7 Inertia switch
8 Ignition switch
9 Centre console
10 Seat belt warning light
11 Instrument pack
12 Door lock unit
13 Fuel filler relay
14 Fuel flap intetface
15 Manual lock/unlock switch
16 Passenger door switch
17 Drivers door switch
18 Key insert switch

PASSIVE ECU CONNECTORS

76.73.00

The two ECU connectors, one PM4, the other PMHD are identified with their pin numbers in Fig 1.

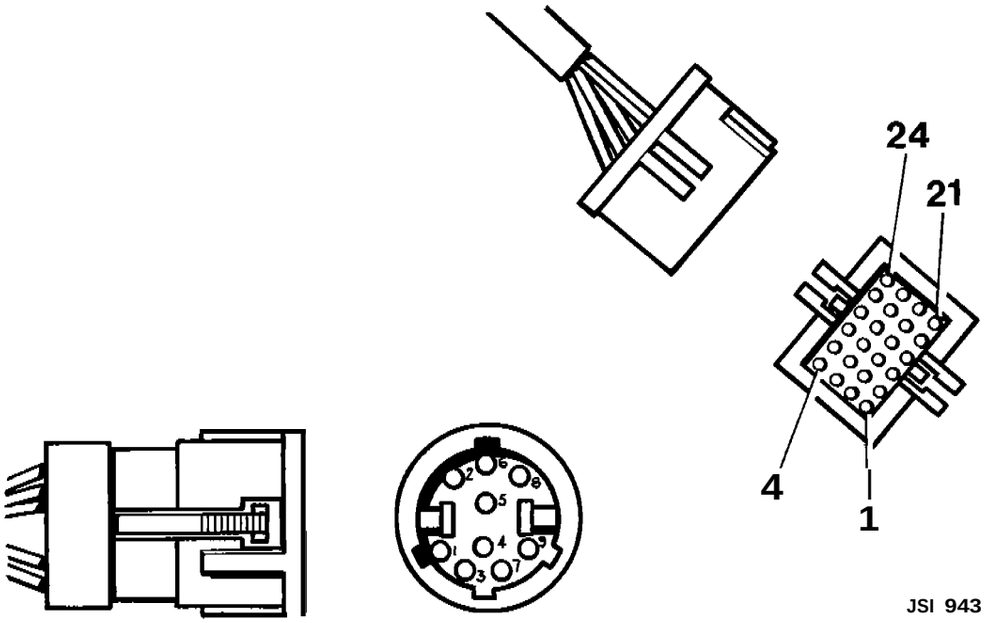


Fig 1

8-WAY PM4 CONNECTOR

Pin	Cable		Pin	Cable	
1	NS	LH system +12V	6	YU	RH motor positive to front
2	YG	LH motor positive to rear	7	6	Earth negative
3	YN	LH motor positive to front	8	B	Earth negative
4	—	Blanked off	9	NS	RH system +12V
5	YU	RH motor positive to rear			

24-WAY PMHD CONNECTOR

Pin	Cable		Pin	Cable	
1	RO	Central locking O/P	10	YR	LH belt proximity
2	KB	ignition (negative)	11	YO	RH belt proximity
3	SLG	LH belt warning	12	—	
4	S	LH door switch I/P	13	YP	RH rear dock switch
5	UR	—	14	YS	RH overtravel switch
6	GP	Inertia switch I/P	15	O	RH door switch
7	YB	LH overtravel switch	16	BK/SB	Logic earth
8	YLG	LH rear dock switch	17	SU	
9	GB	—			

PASSIVE RESTRAINT SERVICE CHECKS 76.73.00

The following checks must be carried out at every 15 000 miles (24km) service interval (the period between services must not exceed six months).

INERTIA SWITCH

The inertia switch is located in the driver's footwell. Ensure all doors except for the driver's are closed. Sit in the driving position and ensure the gear selctor lever is not in the reverse ('R') postion. Close and lock the driver's door by pressing the door locking button dawn; this will also lock the other doors.

Switch the ignition ON (position II), the automatic diagonal seat belts should move to the restaining position. Raise the test/rest button, which protrudes through the top of the inertia switch cover. Observe that the doors unlock, the automatic diagonal seatbelts remain in the restraining position and the instrument display is switched OFF.

Open the front doors, the automatic diagonal belts should not move from the restraining position. Leave the front doors open and reset the inertia switch by depressing the button. Observe that the instrument display is illuminated and that the diagonal seat belts move to the unrestraining (parked) position.

Lock and unlock the doors to ensure the central locking system still functions. Switch the ignition OFF.

SEAT BELT WARNINGS

Sit in the driving postion, close the drivers door and turn the ignition to position II; the automatic diagonal seat belt should deploy to the restaining position (rear dock). The seat belt warning light located on the left-hand side of the fascia below the hazard warning switch and the seat belt symbol on the vehicle condition monitor (VCM) display should be illuminated until the diagonal belt is located in the restraining position.

Release the seat belt buckle from the travelling mechanism by operating the red 'PRESS button. The seat belt warning light and VCM seat belt symbol should illuminate. Re-attach the seat belt buckle to the runner/tongue assembly with the red 'PRESS' button facing inboard. Switch the ignition OFF to release the seat belt.

During these checks the audible warning (continuous low pitched tone) should operate for approximately six seconds when the driver's diagonal belt is not in the restaining position.

REVERSE GEAR INHIBIT SWITCH

Sit in the driving position, close the driver's door and turn the ignition key to position II; the automatic diagonal seat belt should deploy to the restraining position (rear dock) thus extinguishing the seat belt warning lights.

Select reverse gear (position 'R') and open the driver's door. The diagonal belt should remain in the restraining position. Ensuring that body or limbs are not in the path of the deploying seat belt, disengage reverse gear. The diagonal seat belt should deploy to the unrestraining position (front dock).

PASSIVE RESTRAINT MOTOR/DRIVE AND INERTIA REEL ASSEMBLIES

RENEW ***76.73.27***

Remove the front seat 76.70.10.
Remove the seat runner to floor securing bolts.
Lift up the inertia reel side of the runner for access. Use a suitable block for support.
Remove the inertia reel securing bolt (Fig 1), remove the reel assembly.
Remove the B post upper and lower trim pads.
Remove the cant rail crash roll.
Remove the guide rail securing screws and dock assembly securing bolts. Displace the B post upper trim pad mounting bracket.
Displace and remove the guide rail from the dock assembly.
Move the dock assembly adjustment knob to its lowest position.
Fit suitable tape to the dock assembly plastic face and B post aperture lower edge for protection (Fig 4).
Remove the anti-rattle foam blocks from the B post (Fig 2).
Disconnect the motor/harness multi plugs (Fig 3).
Remove the passive motor mounting bracket securing bolts (Fig 2) and displace the motor from the B post.
Turn the dock assembly to face inwards. Position the dock assembly into the B post as far as possible. Tilt the dock assembly upwards to ease removal. Displace and remove the motor/dock assembly (Fig 4).

Fit suitable tape to the dock assembly plastic face for protection during installation.
Fit and align the motor/dock assembly to the B post, taking care not to damage the adjustment plate plastic face.

Reconnect the motor/harness multi plugs.
Position the motor to the B post, fit and tighten the securing bolts.
Fit the foam anti-rattle blocks into the B post.
Remove the tape from the B post aperture and adjustment plate plastic face.
Reposition the dock assembly adjustment knob.
Refit the guide rail and cant rail crash roll.
Refit the B post upper and lower trim pads.
Refit the inertia reel assembly to the seat runner, ensure that the reel bracket locates on the peg.
Fit and tighten the securing bolt.
Remove the support block, reposition the seat runner, fit and tighten the securing bolts.
Refit the front seat.

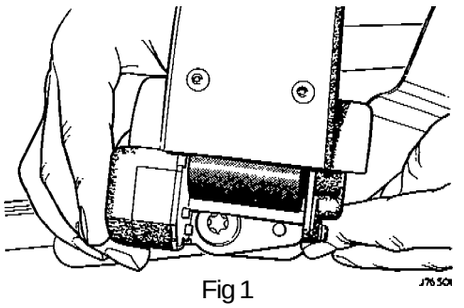


Fig 1

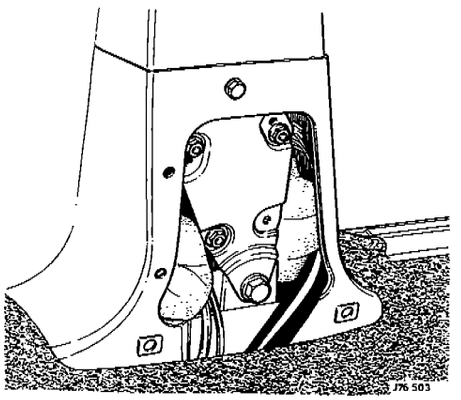


Fig 2

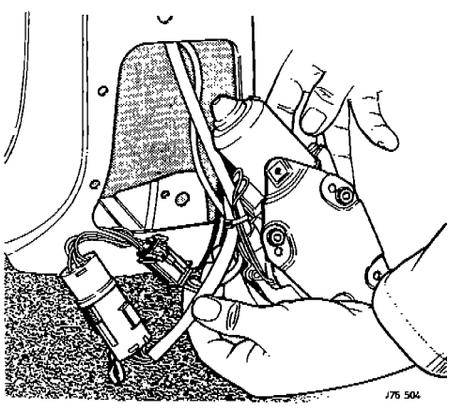


Fig 3

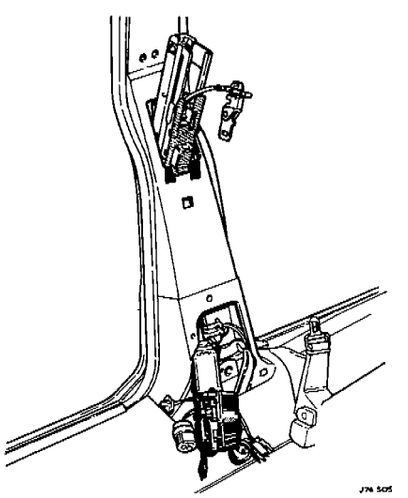


Fig 4

DATA

TORQUE FIGURES

Seat runner bolts 35 Nm

PASSIVE RESTRAINT INERTIA REEL

RENEW **76.73.23**

Remove the front seat 76.70.10.
Remove the seat runner to floor securing bolts.
Lift up the inertia reel side of the runner for access. Use a suitable block for support.
Remove the inertia reel securing bolt (Fig 1), remove the reel assembly.

Fit the new reel assembly to the seat runner, ensure that the reel bracket locates on the peg.
Fit and tighten the securing bolt.
Remove the support block, reposition the seat runner, fit and tighten the securing bolts.
Refit the front seat.

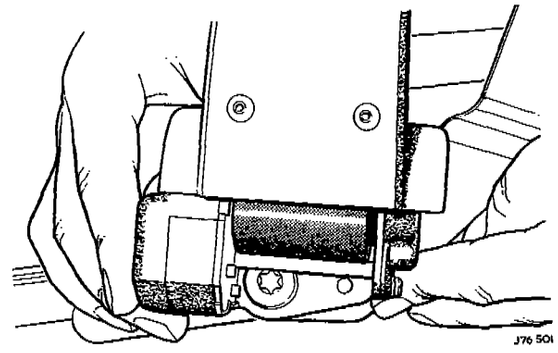


Fig 1

DATA

TORQUE FIGURES

Seat runner bolts 35Nm

0051G

PASSIVE RESTRAINT GUIDE RAIL

RENEW **76.73.33**

Remove the B post upper trim pad.
Remove the cant rail crash roll.
Remove the guide rail securing screws and dock assembly securing bolts. Displace the B post upper trim pad mounting bracket.
Displace and remove the guide rail from the dock assembly (Fig 2).
Carefully remove the seal from the guide rail.

Fit and align the seal to the new guide rail.
Position the guide rail to the dock assembly.
Position the runner tongue into the guide rail.
Fully seat the guide rail into the dock assembly.
Fit the guide rail to the cant rail, fit but do not fully tighten the securing screws.
Fit and align the mounting bracket to the dock assembly, fit and tighten the securing bolts.
Fully tighten the guide rail screws. Refit the cant rail crash roll and upper trim pad.

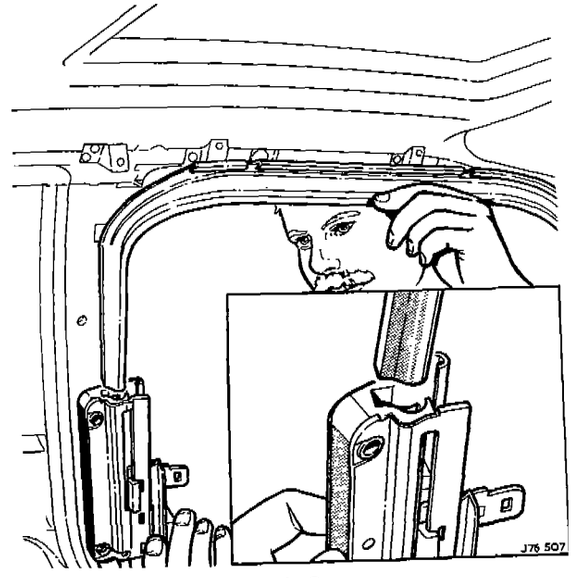


Fig 2

0051G

LAP BELT INERTIA REEL

RENEW *76.73.22*

Remove the front seat 76.70.10.
Remove the seat runner to floor securing bolts.
Lift up the passive inertia reel side of the runner for access. Use a suitable block for support.
Remove the passive inertia reel securing bolt (Fig 1), remove the reel assembly. Displace and remove the lap belt buckle.

Fit and align a new buckle to the seat runner. Fit the passive inertia reel assembly to the seat runner, ensure that the reel bracket locates on the peg.
Fit and tighten the securing bolt.

Reposition the seat runner on the block for access to the lap belt inertia reel. Remove the lap belt reel securing bolt, remove the reel assembly (Fig 2).

Fit the new reel assembly to the seat runner, fit and tighten the securing bolt.
Remove the support block, reposition the seat runner, fit and tighten the securing bolts.
Refit the front seat.

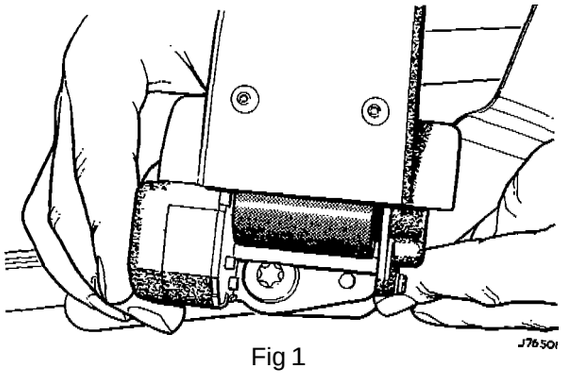


Fig 1

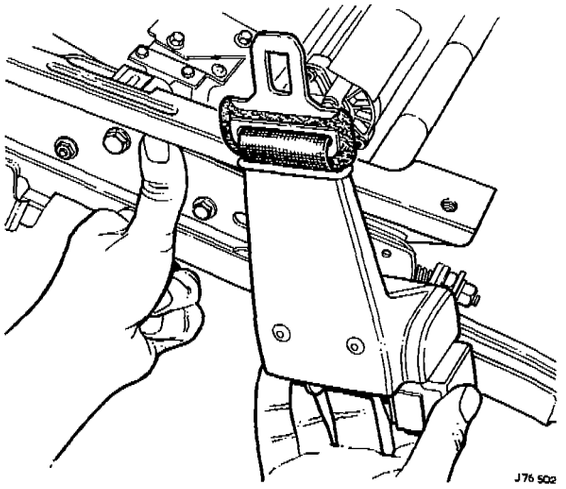


Fig 2

DATA

TORQUE FIGURES

Seat runner bolts **35 Nm**

0051G

1991 MODEL YEAR MODIFICATIONS

FRONT SEAT BELTS

RENEW **76.73.00**

Front seat belt units incorporating a web locker actuation are fitted in place *of* the pawl and ratchet system. Motion and attitude sensors trigger the retractor and cause engagement *of* two wedged sets of teeth to clamp the belt webbing.
Once the wedges have locked onto the webbing, the webbing around the spool retains its original tightness therefore no more webbing is released. This reduces travel or spool out during impact. Web lockers are fitted to the front compartment only.
The web locker is larger and heavier than the conventional unit and has a higher centre of gravity above the mounting hole.

The unit is secured to the BC post with a 7/16 UNF bolt at the base and a screw fitted into a nylon locking socket at the top.

Withdraw sufficient length of webbing up through the inside of the BC post between the trim panel and body and pass through the aperture in the trim panel. Secure the belt upper anchorage point. Secure the unit at the lower sill anchorage point.

FUEL FILLER CAP RETENTION MAGNET

RENEW **76.10.27**

Open the fuel filler cap.
Using a flat bladed screwdriver displace and remove the magnet assembly from the filler flap.
Exercise care to ensure the surrounding paintwork is not damaged.

Using a flat bladed screwdriver fit and seat the new magnet assembly to the new filler flap - note correct orientation.
Close fuel filler flap.

FUEL FILLER FLAP LATCH POST

RENEW **76.10.28**

Open the fuel filler flap.
Displace the latch post retaining tag.
Exercise care to ensure the surrounding paintwork is not damaged.
Remove the latch post.

Fit the replacement latch post and secure with the retaining tag.
Close the fuel filler flap.

SIXTH LIGHT

RENEW **76.81.13**

Open the rear door.
Remove the trim pad securing screw and the coat hanger hook.
Slacken but do not remove the dowager strap securing screws.
Remove the rear seat belt upper anchorage bolt cover and bolt.
Displace the upper portion of the seat belt and collect the spacer.
Undo and remove the rear quarter trim pad lower securing screw.
Unclip the rear quarter trim pad and remove.
Displace the weather seal from the 'D' post channel.
Undo and remove the sixth light finisher securing screws (Fig. 1).
Affix four layers of suitable protective tape on to the 'E' post paintwork and under the sixth light finisher.
Carefully cut through the Betaseal securing sixth light into body aperture using suitable hand cutting tools (Fig. 2).

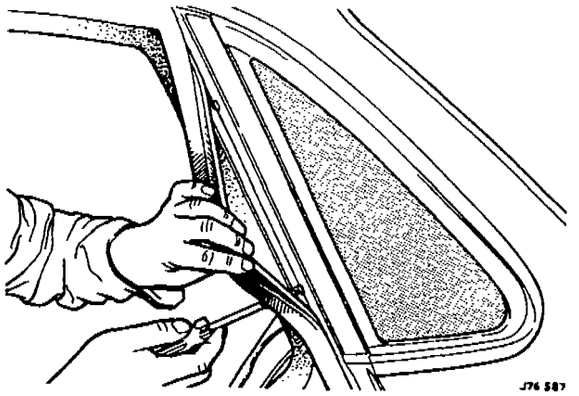


Fig. 1

Note: Release of the bottom and 'D' post edge first gives easier access to top corner and 'E' post edge.

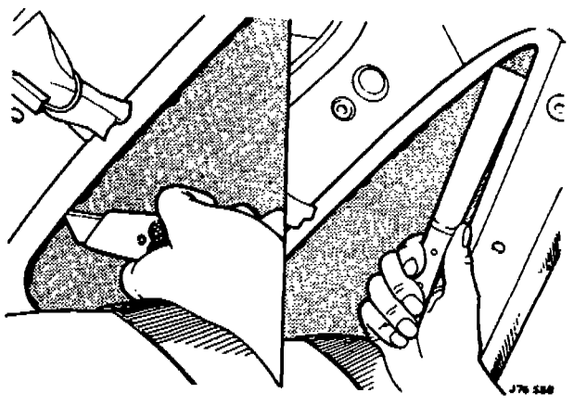


Fig. 2

Place a suitable wooden chock between partially released sixth light and aperture for easier access (Fig. 3).
Remove the sixth light from the vehicle.
Remove the cured Betaseal from the aperture.
'Touch up' the paintwork around the aperture.
Wipe Betaseal degreasing agent on to the aperture.
Apply Betaseal primer on to the aperture.
Carefully remove excess cured Betaseal from the removed glass.
Wipe Betaseal degreasing agent on to the sixth light glass edge.
Carefully apply Betaseal glass primer on to the glass ensuring that the primer does not smear the glass edge 'fading'.
Apply a continuous bead of Betaseal to the glass periphery keeping clear of the glass 'fading'.
Carefully fit and fully seat the glass assembly into Position in the body aperture.
Adjust the sixth light position for general fit and alignment of screw holes and upper trim joiner.
Fit and tighten the screws to secure the finisher to the 'D' post.

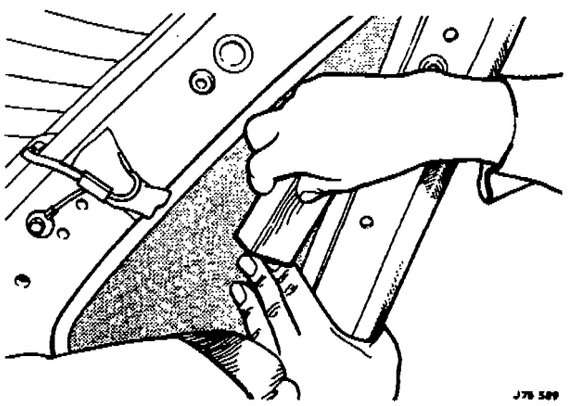


Fig. 3

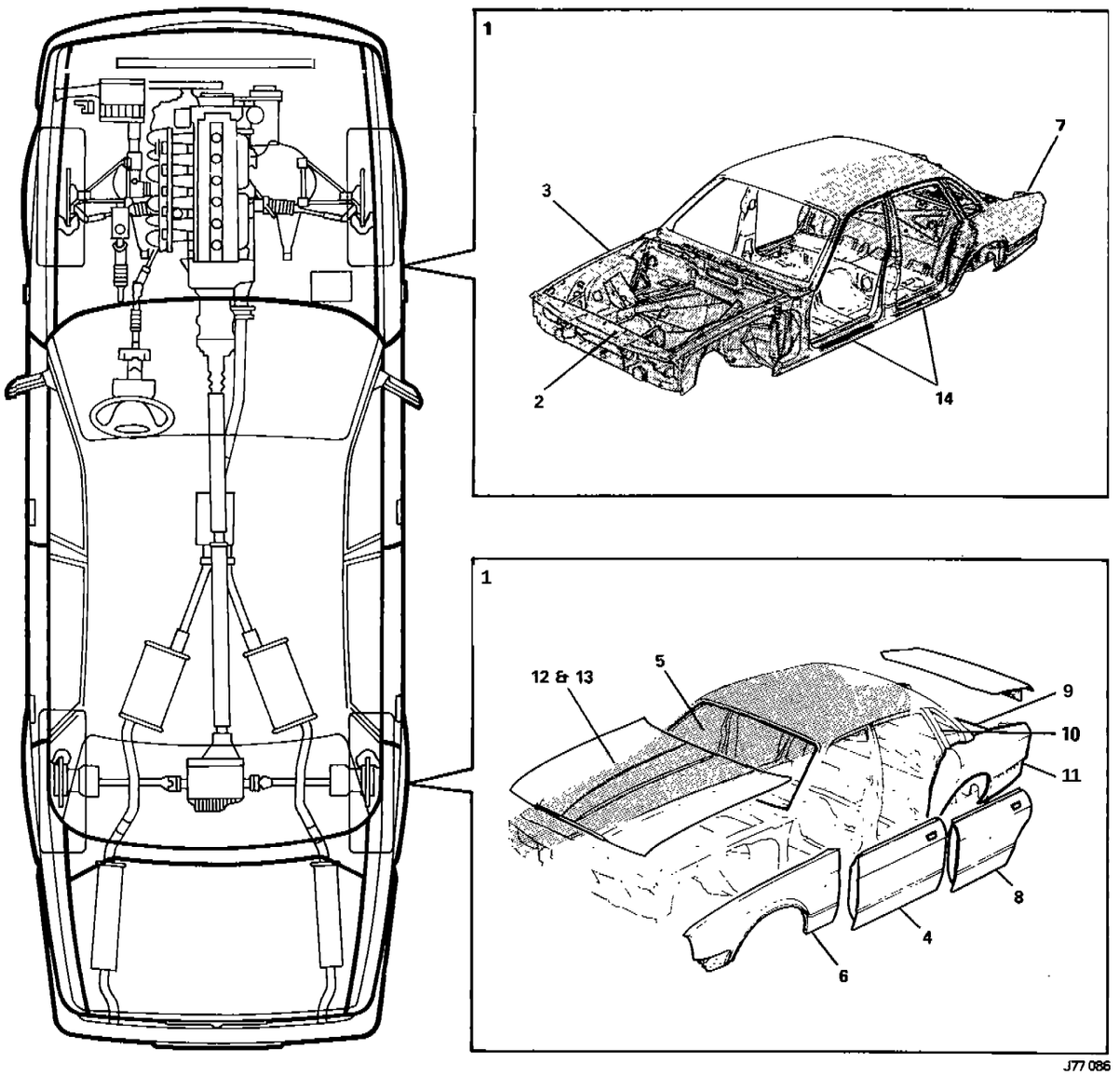
Fully seat the weather **seal** in to the 'D' post channel.
Remove the protective tape lamination from the 'E' post.
Place **the rear** quarter trim **pad** in position ensuring that the leading edge engages behind the dowager strap mounting.
Align and **secure** the trim pad.
Fit and tighten the rear quarter trim pad.
Tighten the dowager strap securing screws.
Refit the coat hanger **hook.**
Refit the seat belt spacer.
Reposition and align the seat belt to the upper anchor point.

CONTENTS

DESCRIPTION	OPERATION	OPERATION No	PAGE No
ANTI-THEFT LABELS	NOTES	77.00.00	77-10
ASBESTOS	PRECAUTIONS	77.00.00	77-05
ASSOCIATED PANELS	RENEW	77.10.00	77-11
BONNET MOUNTING PANEL	RENEW	77.15.02	77-15
CUTTING AND WELDING	SYMBOLS	77.00.00	77-05
DIMENSIONS	DIAGRAM	77.00.00	77-06
FRONT END REPAIRS – COMBINATION 2	RENEW	77.50.04	77-25
FRONT DOORSKIN	RENEW	77.20.02	77-16
FRONT SCREEN	RENEW	77.45.02	77-22
FRONT WING	RENEW	77.25.01	77-16
GENERAL REPAIR	NOTES	77.00.00	77-05
HEALTH AND SAFETY	NOTES	77.00.00	77-04
INDEX	ILLUSTRATED	77.00.00	77-02
NEW SURFACES	PREPARE	77.10.04	77-12
OLD SURFACES	PREPARE	77.10.03	77-12
PAINTS, SEALANTS AND TRIM	DESCRIPTION	77.00.00	77-07
PANEL/S	INTRODUCTION	77.10.00	77-09
PANEL/S	OFFER UP	77.10.05	77-13
PANEL/S	RENEW	77.10.01	77-11
PANEL/S	SOLDER	77.10.07	77-14
PANEL/S	WELD	77.10.06	77-13
REAR END REPAIRS – COMBINATION 1	RENEW	77.50.05	77-31
REAR DOORSKIN	RENEW	77.20.04	77-17
REAR PANEL	RENEW	77.35.01	77-21
REAR SCREEN	RENEW	77.45.03	77-23
REAR WING	RENEW	77.25.02	77-19
SEALING	DIAGRAM	77.00.00	77-08
SIDE REPAIRS – COMBINATION 1	RENEW	77.50.01	77-28
SIDE REPAIRS – COMBINATION 2	RENEW	77.50.02	77-30
SILL PANEL SECTION	RENEW	77.40.02	77-19

0055G

ILLUSTRATED INDEX



ILLUSTRATED INDEX – KEY

ITEM No	DESCRIPTION	OPERATION No	PAGE No	VOLUME
–	ANTI-THEFT LABELS	77.00.00	77-10	**4**
–	ASBESTOS	77.00.00	77-05	4
1	ASSOCIATED PANELS	77.10.02	77-11	**4**
2	BONNET MOUNTING PANEL	77.15.02	77-15	**4**
–	CUTTING AND WELDING	77.00.00	77-05	**4**
–	DIMENSIONS	77.00.00	77-06	**4**
3	FRONT END REPAIRS – COMBINATION 2	77.50.04	77-25	**4**
4	FRONT DOORSKIN	77.20.02	77-16	4
5	FRONT SCREEN	77.45.02	77-22	4
6	FRONT WING	77.25.01	77-16	**4**
–	GENERAL REPAIR	77.00.00	77-05	**4**
–	HEALTH AND SAFETY	77.00.00	77-04	4
–	INDEX	77.00.00	77-02	**4**
1	NEW SURFACES	77.10.04	77-12	**4**
1	OLD SURFACES	77.10.03	77-12	4
–	PAINTS, SEALANTS AND TRIM	77.00.00	77-07	**4**
1	PANELS	77.10.00	77-09	4
1	PANELS	77.10.05	77-13	**4**
1	PANELS	77.10.01	77-11	**4**
1	PANELS	77.10.07	77-14	**4**
1	PANELS	77.10.06	77-13	4
7	REAR END REPAIRS – COMBINATION 1	77.50.05	77-31	**4**
8	REAR DOORSKIN	77.20.04	77-17	**4**
9	REAR PANEL	77.35.01	77-21	4
10	REAR SCREEN	77.45.03	77-23	**4**
11	REAR WING	77.25.02	77-19	**4**
–	SEALING	77.00.00	77-08	4
12	SIDE REPAIRS – COMBINATION 1	77.50.01	77-28	4
13	SIDE REPAIRS – COMBINATION 2	77.50.02	77-30	4
14	SILL PANEL SECTION	77.40.02	77-17	**4**

0032K

HEALTH AND SAFETY

The Health and Safety at Work Act (1974) places a duty on employers to ensure (whenever practicable) safe working conditions and the absence or risks to health in connection with the use, handling, storage and transport of articles and substances. With the introduction in recent years of new materials in the manufacture of vehicles it is important that the risks are highlighted and the precautions made known.

PAINT:

Most paints contain organic solvents, these can cause damage to the liver and kidenys if inhaled over long periods.
Servere solvent inhalation can cause dizziness or loss of consciousness.
Splashes of solvents, paint activators and additives can cause damage to the eyes.
Solvent to the skin can cause dermatitis.
Spray dust and sanding may cause lung damage.
Peroxide and acid catalysts may cause burns.
Isocynates may cause lung sensitisation and development of asthma-like symptons will follow on subsequent exposure to very low concentrations of isocyanates.
Inhaling paint may cause severe irriation of the mouth, throat and digestive tracts.

THE FOLLOWING PRECAUTIONS WILL ELIMINATE MOST RISKS.

The inhalation of fumes, dust or sprays, either during the application of paint or during sanding processers should always be avoided by ensuring there is efficient general ventilation at all times and where appropriate efficient local ventilation. Spraying should be confined as far as possible to spray booths. Personnel with a history of asthma should not be engaged in any process which invloves the use of isocynates. Whenever an operator, whether involved in spraying or not has to work inside a spray booth where isocyanate material is normally used, then compressed airline breathing apparatus must be used. Supply to the breathing apparatus should be fitted with an efficient oil/water and fume filter to provide breathable air. Operators involved in handling, mixing or spraying should wear protective clothing and gloves to avoid skin contact and goggles or a full face visor to avoid splashes in the eyes. A particle mask or canister type respirator should be worn when sanding.

PANEL REPLACEMENT:

The increased use of expanded foam for sound insulation, the introduction of special materials in corrosion protection, the use of specialised adhesives, sealing compounds, trim and seat materials in vehicle manufacture, paints containing isocyanates can all give off toxic and dangerous fumes when subjected to heat. Polyurethane based paints could, at a temperature of 300" liberate small quantites of the parent isocyanate. This has been established by the Fire Research Station. The burning of expanded foams will also liberate toxic fumes. All kinds of nitrogen containing chemicals can be liberated as breakdown products, these chemicals will contain isocyanates, oxides of nitrogen and hydrogen cyanide. Fumes and gases are produced by welding, for example a large volume of ozone gas is created when MIG welding. They may be potentially toxic or asphyxiant (causing a lack of air by build up of gas in confined spaces).

PRECAUTIONS:

Operators engaged in accident repair work should wear face masks/fresh air masks when carrying out such operations as sanding, flatting body solder or fillers. A mask and/or fume extractor should be used when welding as well as wearing flameproof protective clothing. Safety goggles should be worn when sanding, drilling, chiselling, flatting or resistance spot welding, or any other risk which may be identified by the operator.

The Health and Safety at Work Act (1974) places upon the operator a responsibility to co-operate in reducing the risk to health.

ASBESTOS PRECAUTIONS

In line with U.K. Government policy to reduce the use of asbestos, JAGUAR CARS are progressively eliminating their use of this material in vehicle manufacture. However, body underseal (asbestos embedded in black mastic material) contains small amounts of permitted white asbestos (Chrysotile).
WARNING: IF IT IS NECESSARY TO REMOVE UNDERSEAL, USE A SOLVENT OR 'HOT KNIFE'. DO NOT BURN OFF.

GENERAL REPAIR NOTES.

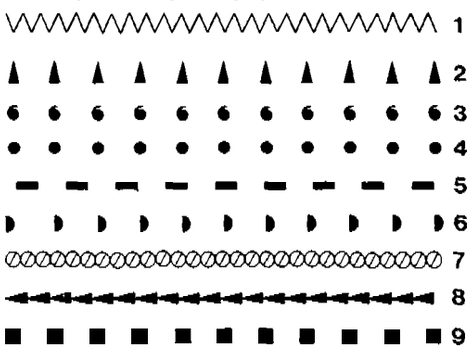
During repair, all old and new panel surfaces to be resistance spot welded together have the primer removed and are then treated with weld-through primer to provide corrosion protection in the weld area.
The weld nugget produced by the resistance spot welding equipment available to the motor vehicle repair trade is smaller than that produced by production equipment. In the welding tables, the expression 'single row of resistance spot welds' is used. This means that resistance spot welds should be spaced 5/8" (16mm) to 1" (25mm) apart which will usually mean that more resistance spot welds will be replaced in the repair joint than were removed from the factory joint.

To remove resistance spot welds, a resistance spot weld cutter should be used. If the new joint is to be MIG Plug welded, the old resistance spot welds should be cut from the panel that is to be retained, whenever possible and these holes used for plug welding. Alternatively, if necessary, holes may be punched or drilled for this purpose.

It must be ernphasised that all safety precautions must be observed and protective equipment used when carrying out welding and grinding operations, etc.

CUTTING AND WELDING SYMBOLS USED IN THIS SECTION (Referring to Fig 1)

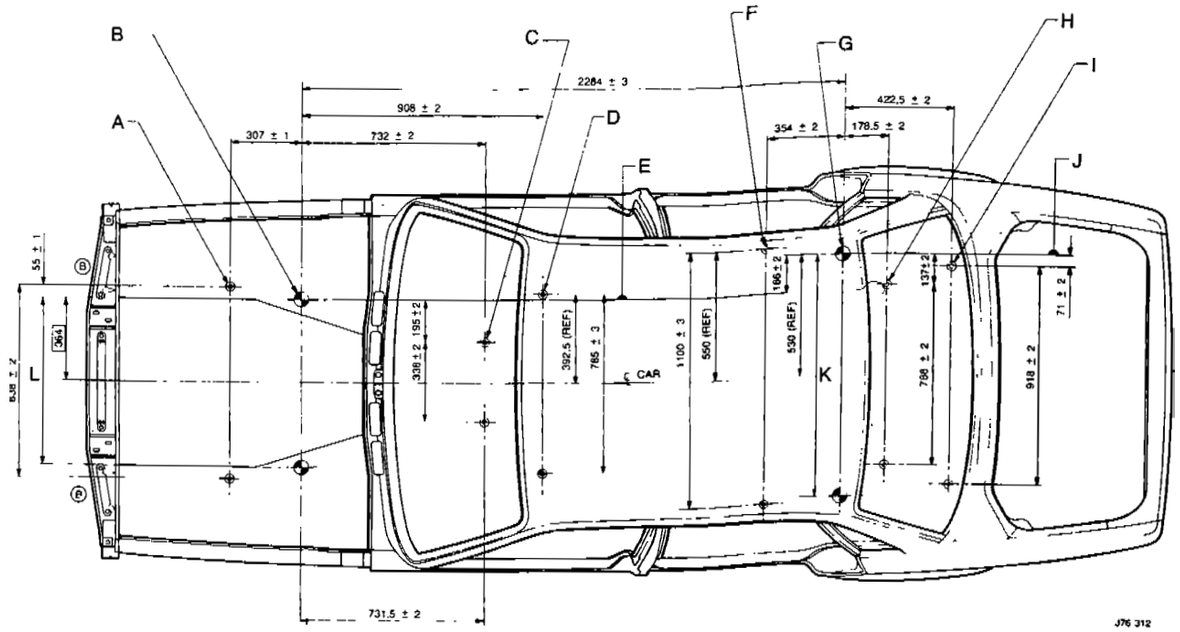
1. Saw Cut
2. Chiesel Cut
3. Cut Out Spot Weld.
4. Resistance Spot Weld
5. Mig Tack Weld
6. Mig Seam/Butt Weld
7. Braze
8. Gas Weld
9. Mig Plug Weld

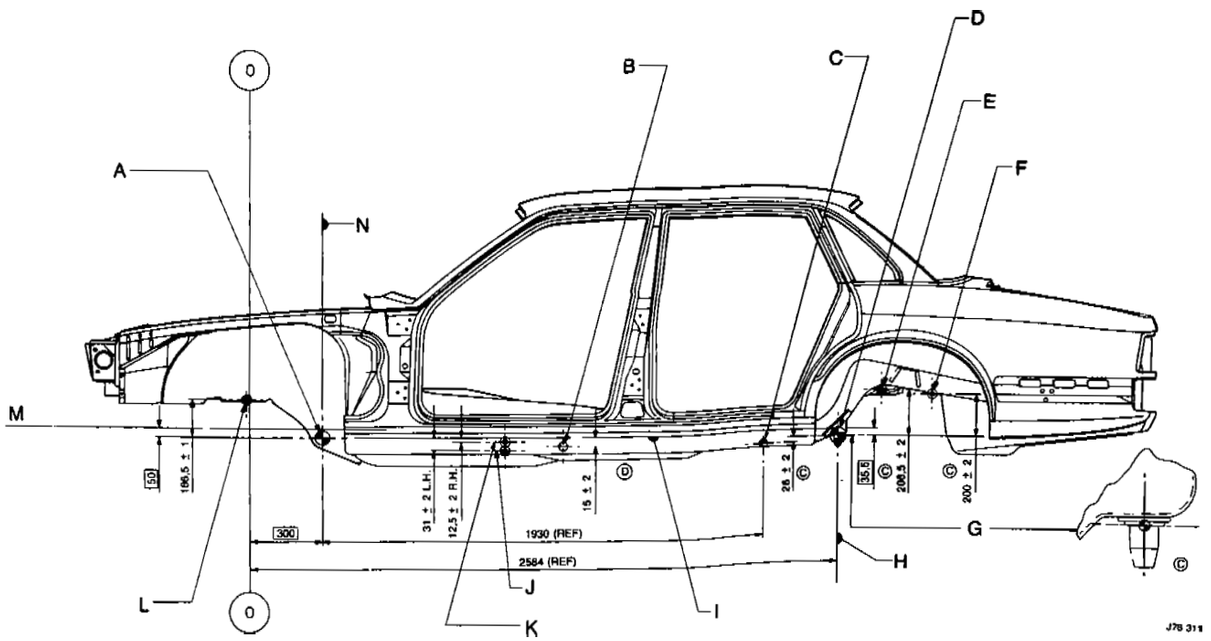


JT7 014

Fig 1

DIMENSIONS


B
C
F
G
H
I
A
D
E
J
2284 ± 3
908 ± 2
422,5 ± 2
307 ± 1
732 ± 2
354 ± 2
178,5 ± 2
55 ± 1
364
L
338 ± 2
195 ± 2
392,5 (REF)
785 ± 3
℄ CAR
1100 ± 3
550 (REF)
166 ± 2
530 (REF)
K
137 ± 2
788 ± 2
918 ± 2
71 ± 2
731,5 ± 2
J76 312


0
B
C
D
E
A
F
N
M
50
186,5 ± 1
31 ± 2 L.H.
12,5 ± 2 R.H.
15 ± 2
26 ± 2
35,5
200,5 ± 2
200 ± 2
300
1930 (REF)
2584 (REF)
G
H
J
L
K
I
J76 311

PAINTS, SEALANTS AND TRIM (PLASTIC) 77.00.00

PAINT

The Jaguar XJ6 2.9-4.0 range is available and finished in the following colours:

Alpine Green Metallic	HES(709)
Arctic Blue Metallic	JFE(337)
Bordeaux Red Metallic	CEK(340)
Crimson Metallic	CEV(714)
Dorchester Grey Metallic	LDP(342)
Grenadier Red	CEH(332)
Jaguar Racing Green	HEN(701)
Jet Black	PDH(333)
Moorland Green Metallic	HET(717)
Nimbus White	NOJ (700)
Satin Beige Metallic	AVF(711)
Silver Birch Metallic	MDJ(716)
Solent Blue Metallic	JEW(715)
Sovereign Gold Metallic	GDF(341)
Talisman Silver Metallic	MDF(336)
Tungsten Metallic	JEX(718)
Westminster Blue	JFG(712)

NOTE: 1. Numbers shown in brackets denote BLVC/JBC codings.
2. The paint code is to be found at the base of the LH 'B' post.

PAINT MANUFACTURERS AND SYSTEMS

MANUFACTURERS	SYSTEM: BASECOAT	SYSTEM: CLEARCOAT
Ault & Wiborg	Aultragem	Two-pack 24375
Berger	2K Standocryl	Two-pack Klarjack
	Metallic Basislack	Two-pack Klarjack
CIL	2K Basecoat	2000-6000 Clear
Dulux	Dulux 354	2K Clearcoat
	2K Acran Enamel	455-30900
Dupont (USA)	Lucite	580S
	Cronar	Cronar Clear
Glasurit	Glassomax 54	Glassodur
	Glassodur 21	MS Top Clear 923-985
ICI	P422 2K Basecoat	Two-pack P190-435
	P420 2K Acrylic	One-pack P190-390
		(Local repair only)
Inmont	Dia-mont	Diamontop
PPG	Acryline	Two-pack Acryline
Rinshed-Mason	Miracryl 2	MC1000 Clear
Sikkens (Europe,	Autobase	Two-pack Clear
Canada, USA)	Autocryl	Two-pack Clear
Spartan	Eurobase 131	Eurobase Clear
	Eurocryl	124-2468

CORROSION PROTECTION

In production, the vehicle is given an under body protection. Stone chip primer is also used on the sill panels while hot wax injection is applied to all box sections and closed members.
Materials are supplied under the following descriptions:

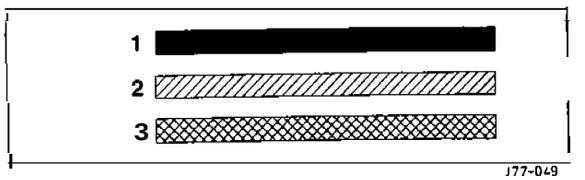
UNIPART PENETRANT

UNIPART SEALANT

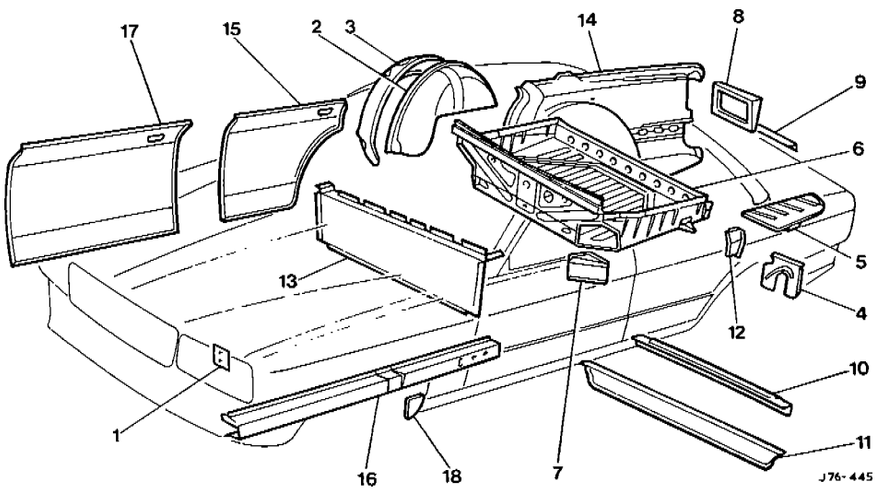
A sealing diagram showing the types and locations of sealed joints used is also included, where applicable, in each method description section. A key explaining the symbols in the sealing diagrams is shown below.

SEALING DIAGRAM

1. VISIBLE SEALANT
2. HIDDEN SEALANT
3. BOLTED PANEL SEALER



In addition, certain body panels are zinc electro-coated, locations are shown below.



1	Bonnet hinge shim hinge RH and LH"""	10	Rear panel upper reinforcement*
2	Inner rear wheelarch RH and LH"	11	Rear panel lower reinforcement'
3	Outer rear wheelarch RH and LH*	12	Rear panel lower corner gusset RH and LH***
4	Rear wheelarch lower extension RH and LH"""	13	Boot lid lower panel'
5	Boot floor side extension RH and LH***	14	Rear wing RH and LH*
6	Boot floor	15	Rear doorskin RH and LH*
7	Boot floor corner gusset RH and LH"'	16	Inner sill RH and LH**
8	Tail lamp panel RH and LH""	17	Front doorskin RH and LH'
9	Tail lamp panel lower gusset RH and LH	18	Sill front end capping RH and LH***

* Inner surface only
** Outer surface only
*** Both surfaces

Electro coat thickness 0.008mm on all treated surfaces.

PLASTIC EXTERIOR TRIM

Plastic materials are used for certain exterior trim components, the locations of which are shown below.

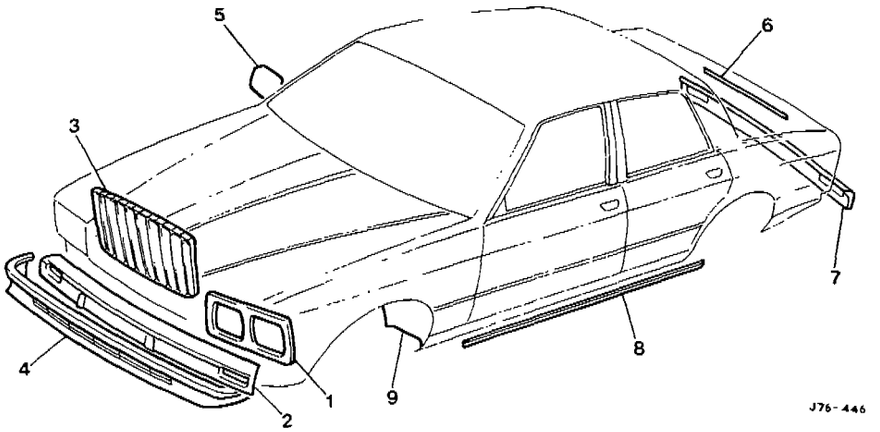


Fig 1

1	Headlamp surround RH and LH – ABS (painted)
2	Front bumper cladding – EPDM
3	Front grille slat inserts – ABS (chromed)
4	Front spoiler – Thermoplastic elastomer vistaflex 215B (painted)
5	Door mirror shell RH and LH – Polyamid nylon
6	Boot lid lower moulding – ABS (painted)
7	Rear bumper cladding – EPDM
8	Sill moulding RH and LH – Glass-filled polyurethane RRIM (painted)
9	Front wheelarch splashguard and baffle RH and LH – HDPP polypropylene co-polymer

PANEL REPLACEMENT

INTRODUCTION *77.10.00*

The following information is designed to explain the basic panel removal and replacement methods. The following panel replacement operations have been standardised and kept as simple as possible. The main criteria in removing and replacement of body panels is that the manufacturers original standard is maintained as far as possible.

Through experience gained over a period of time a standard method of removal and replacement for a welded panel has been devised placing emphasis on ease of repair by eliminating unnecessary work. The replacement details all the operations that may need to be carried out by an operator, together with details of the tools used. All repairs should be carried out to a professional standard. Provided this standard is maintained, all repairs including part panels, will result in the same standards of strength and operational safety being maintained as that of a new vehicle.

Reference should always be made to the welding diagrams and tables in the procedure. The criteria should be that the repairs carried out should restore as near as possible the original standard of manufacture.

ANTI-THEFT LABELS ON REPLACEMENT PARTS

Jaguar replacement Parts – panels, etc. are supplied to the USA in electrocoat primer fitted with anti-theft labels CBC 4149 (Fig 1) in specific locations. A protective mask is used to prevent the label from being damaged or obscured by paint and rustproofing material.

The wording on the protective mask is as follows;

"TO COMPLY **WITH U.S. FEDERAL LAW, REMOVE THIS AFTER PAINT HAS DRIED."**

Fig. 1

The following procedures/precautions **must** be observed with anti-theft labels when fitting **replacement** parts to vehicles.

1. The protective mask on the anti-theft label must not be removed until **all** preparation, painting and rustproofing work has been carried out.

2. The protective mask **must be** removed from the anti-theft label prior to vehicle handover to the customer.

NOTE: It cannot be stressed too highly that Federal law requires dealers to remove paint masks from anti-theft labels after performing painting and rustproofing operations. Failure to comply renders manufacturer and dealer liable for violations of the law (listed below).

Federal Motor Vehicle Theft – 51 FR **8831,** at **8835,** March 14 **1986** Prevention Standard

Motor Vehicle Information – 15 U.S.C. 2027(a)(4)(B) and and Cost Savings Act 2027(b), sections 607(a)(4)(B) and 607(b).

PANEL/S

RENEW **77.10.01**

Jack up vehicle and place on axle stands.
Remove toadwheels.
Prepare equipment: ensuring that all tools required in the removal sequence of operations are available and to hand.
Protect vehicle, use an asbestos blanket to protect the interior, and a protective cloth for the exterior.

ASSOCIATED PANELS:

RENEW ***77.10.02***

This may involve for example the removal of a front wing to provide access to the front panel.

Expose resistance spot welds. For those spot welds which are not obviously visible, use a rotary wire brush fitted to an airdrill or a hand held wire brush (Fig 1).

NOTE: In wheelarch areas it may be necessary to remove underseal, prior to exposing spot welds. Use a solvent or 'hot knife'. DO NOT BURN THE SEALANT OFF.

Centre punch spot welds ensuring that an adequate centre punch is made to give good centering, then cut out the welds using a Zipcutter or Roto-Bor (Fig 2) set to the correct depth of cut.

At this point it may be necessary to cut out the bulk of the panel using a pneumatic-saw (Fig 3).

NOTE: On some panels, before removing bulk of panel with pneumatic saw, brazes and MIG seam welds should be removed.

Separate spot welded joints and remove panel remnants, using hammer, bolster chisel and pincers (Fig 4).

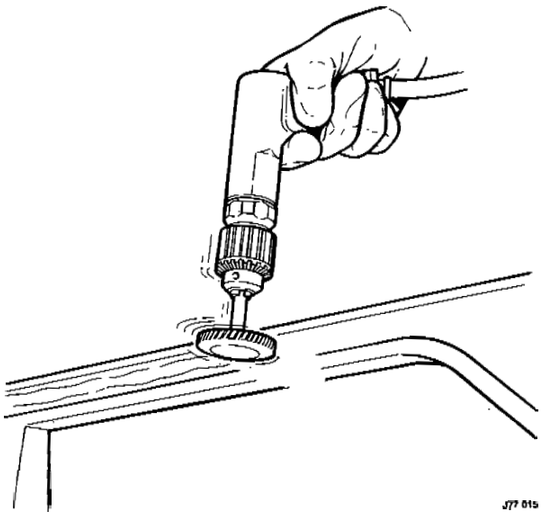


Fig 1

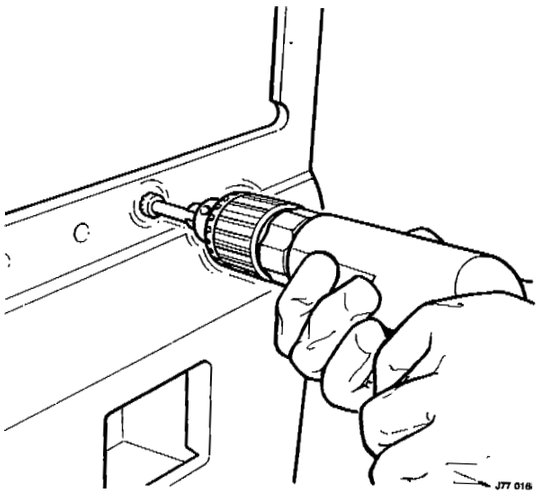


Fig 2

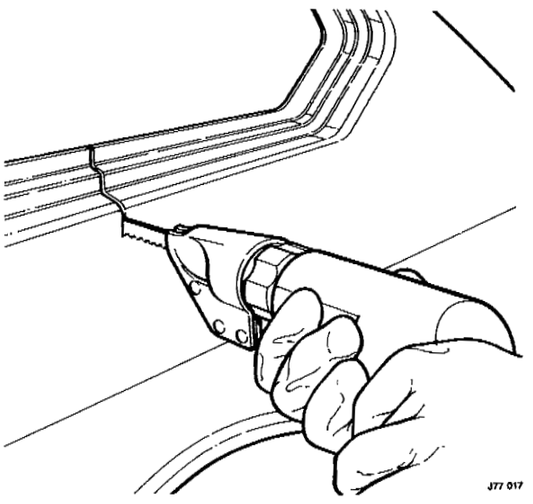


Fig 3

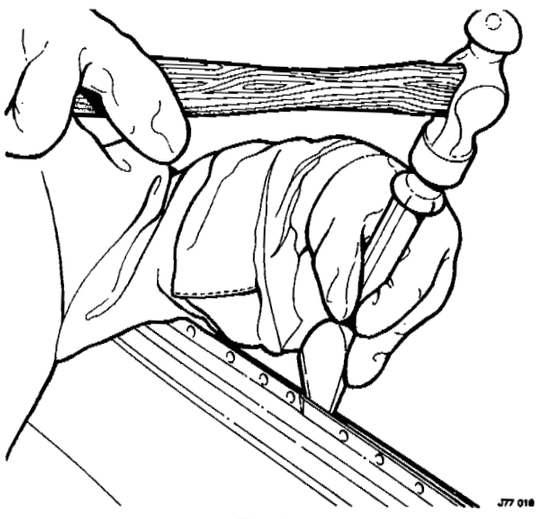


Fig 4

OLD SURFACES

PREPARE **77.10.03**

NOTE: In wheelarch areas it may be necessary to remove underseal, prior to exposing spot welds. Use a solvent or 'hot knife'. DO NOT BURN THE SEALANT OFF.
During welding/cutting, ensure that a mask is worn and fume extraction equipment is correctly positioned.
Remove weld nuggets with a sander, 36 grit disc.
Clean all flange edges to a bright smooth finish, using a grinder if necessary (Fig 1).
Straighten existing panel joint edges with a Dollyblock and hammer.

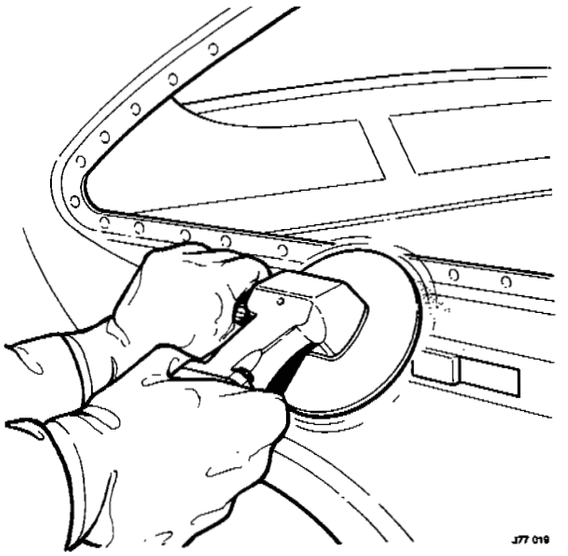


Fig 1

NEW SURFACES

PREPARE **77.10.04**

Mark off the area of new panel and cut to size leaving approx 2" overlap over the existing panel.
Offer up new panel/section, align with associated panels, i.e. new rear wing aligned with door boot lid/tail gate. Clamp into position (Fig 2).
Where necessary cut new and original panels to form a butt joint (Fig 3).
Remove all clamps and new panel.
Prepare new panel joint edges for welding by cleaning to bright metal (Fig 4). This includes interior and exterior edges.
Apply weld-through primer to all surfaces to be resistance spot welded.

Apply metal-to-metal adhesive or sealer in accordance with the car manufacturer's instructions.

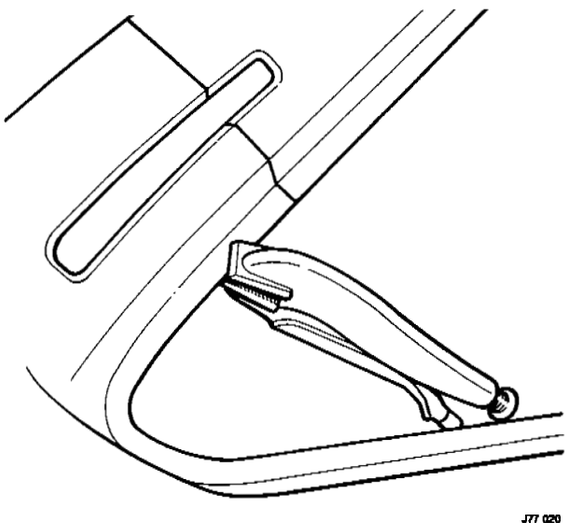


Fig 2

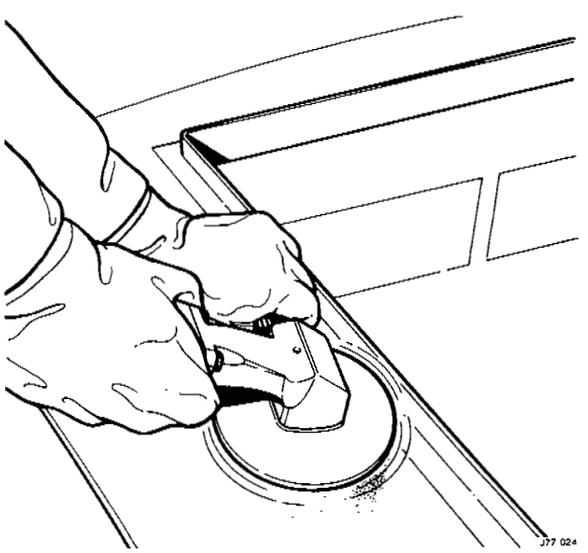


Fig 4

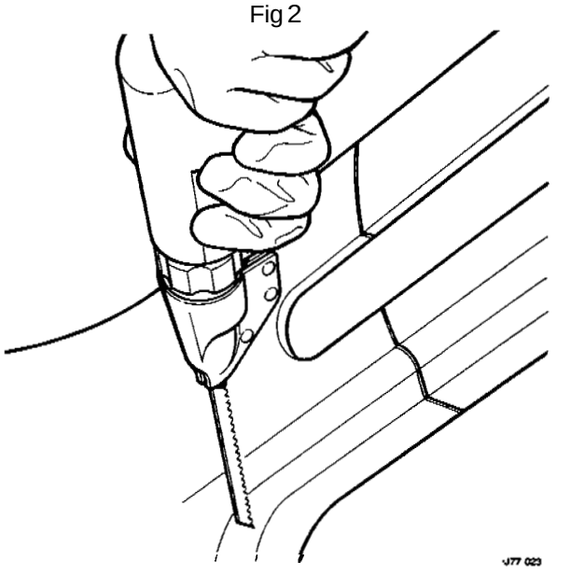


Fig 3

PANEL/S

OFFER UP AND ALIGN *77.10.05*

Offer up new panel section and re-align with associated panels, clamp into position using welding clamps or mole grips. With certain panels it may be necessary to fix the panel with tack welds or PK screws.

PANEL/S

WELD *77.10.06*

MIG tack butt joint/s (Fig 1), re-checking alignment and panel contours as necessary.
Select arms for resistance spot welding and clean tips using the tip trimmer.
It is recommended that arms of not more than 12 inches in length are used (Fig 2).
Fit spot welding arms and test equipment for satisfactory operation, using test coupons (Fig 3).
In the absence of monitoring equipment a satisfactory weld can be verified by the pulling of a weld 'slug' on separation of the test coupons.
Resistance spot weld where necessary (Fig 4).
Dress MIG tack welds with a sander, 36 grit disc.

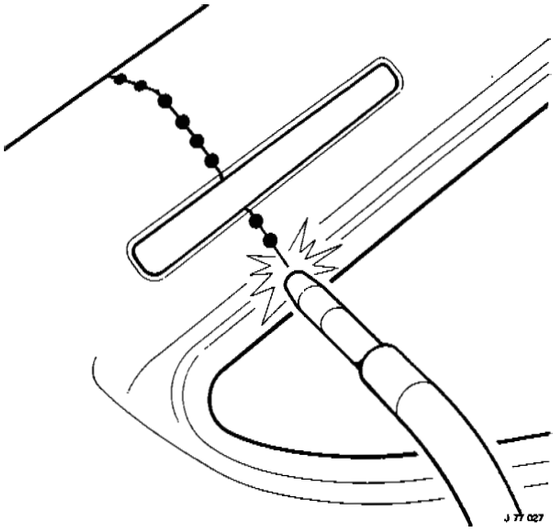


Fig 1

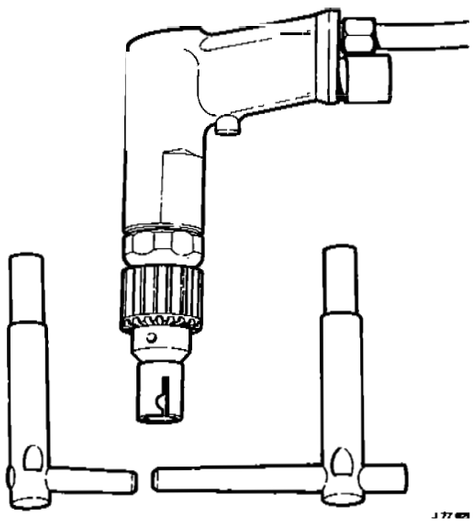


Fig 2

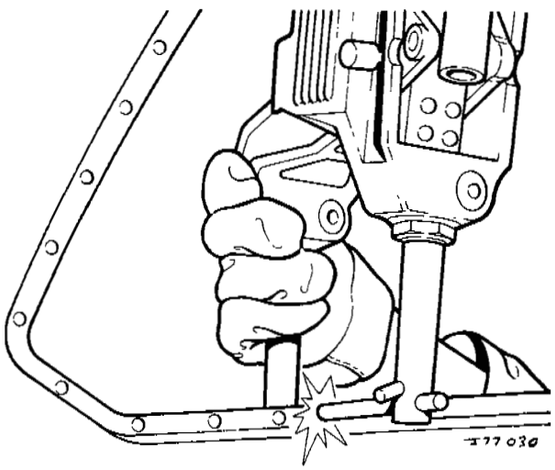


Fig 4

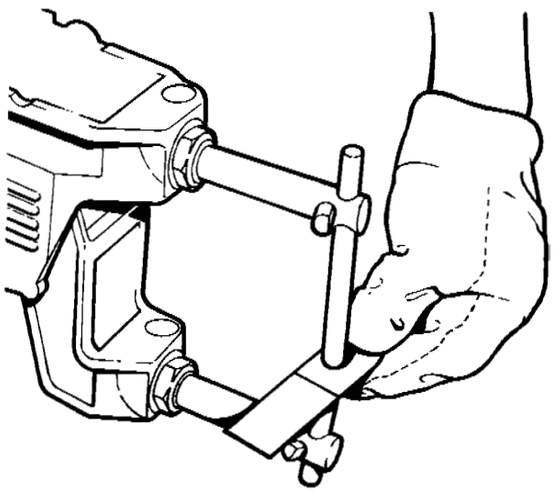


Fig 3

MIG seam weld butt joints (Fig 1).
Dress all welds using a sander, **36** grit disc.
NOTE: Any brazing required must be done at this point.

PANEL/S

SOLDER ***77.10.07***

Prepare areas to be soldered by cleaning with a rotary wire brush/sander, 80 grit disc.
Tin areas to be soldered by applying solder paint, and heating with a propane gas torch (Fig 2).
Wipe joint area clean with cloth.
Apply solder.

Shape solder to joint using a gas torch, hardwood block and tallow (Fig 3). The solder should **be** carefully and evenly spread over the whole joint area, to achieve as smooth a finish as possible.
Shape and dress soldered areas using body files (Fig 4), 80 grit production paper, and a random orbit sander.
Neutralise the solder by cleaning and wiping the finished area with an ammonia soaked cloth.
NOTE: **Health and safety regulations require that on completion of solder dressing the dress must be removed from the work area. At the end of soldering, operators must wash their hands.**
Apply highlight oil to determine final **quality** of **panel** shape.
Remove protective covers and clean the car interior.
Seal **all** joints with 3M 'Drip-Chek' automotive joint seam sealer, and apply underseal where necessary. Anti-drum pads can now be fitted.
The panel replacement is now complete so the road wheels can be replaced and the vehicle lowered to the ground.

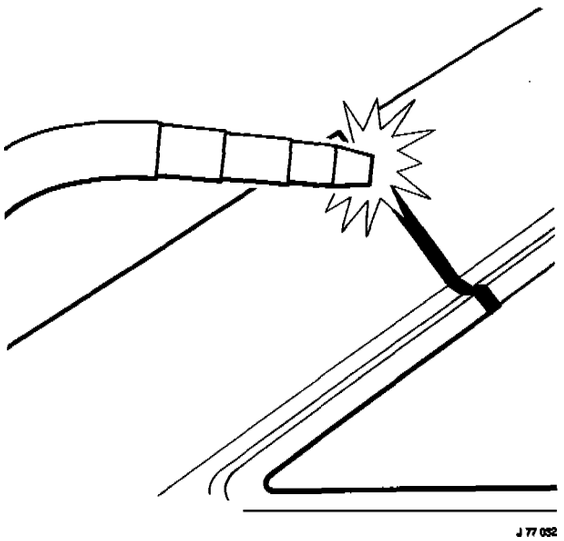


Fig 1

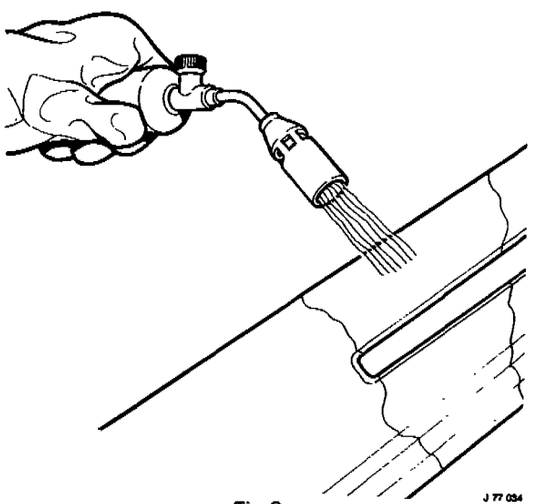


Fig 2

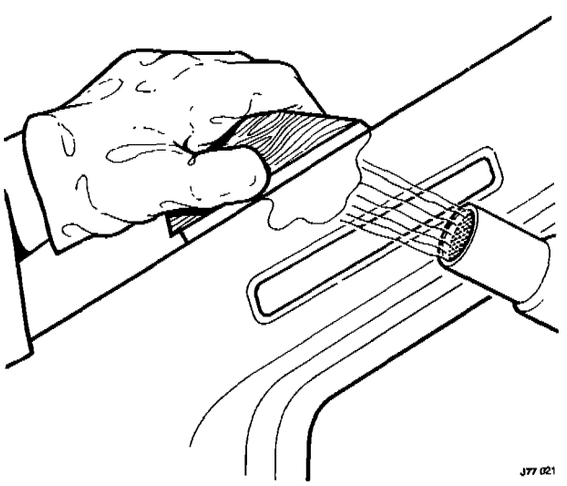


Fig 3

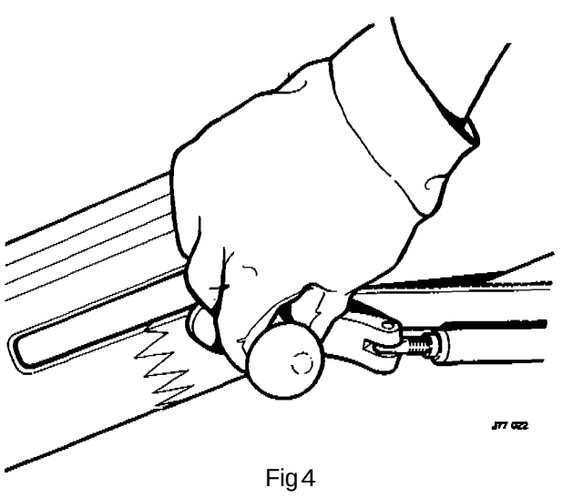


Fig 4

BONNET MOUNTING PANEL

RENEW **77.15.02**

Welding **Table**

No.	Location	Remove Factory Joint	Replace Repair Joint
1	Corner gusset to mounting panel RH and LH	10 resistance spot welds each side	10 MIG plug welds each side
2	To headlamp panel rear flange RH and LH	9 resistance spot welds each side	Single row of resistance spot welds each side ARO arms or equivalent
3	To headlamp panel upper flanae RH and LH	6 resistance spot welds each side	Single row of resistance spot welds ARO arms 242A or eauivalent

Disconnect battery and alternator.
Remove:
Front bumper assembly with flasher lamp unit RH and LH.
Disconnect horns.
Remove:
Grille, front screenwasher bottle filler neck mounting bracket, headlamp unit RH and LH.
Jack up front of vehicle and place on axle stands.
Drain the radiator.
Remove:
Radiator mounting panel, disconnect expansion tank hose, upper hose at thermostat housing, lower hose, power steering hose at reservoir and radiator.
Drain power steering system.
Remove radiator with shroud.
Disconnect air conditioning pump, lay aside refridgerant unit, remove cooling fan, bonnet front edge weatherseal, courtesy lamp switch and 1 front wing mounting bolt RH and LH (for access only).
Associated Panel:
Remove the bonnet 77.15.01.
Panel Replacement:
Panel removal and replacement is to the method detailed in Section 77.10.01-07 with the following variations:
During removal, the panel is cut at point (1 Fig 1) to gain access with a resistance spot weld cutter at (2 Fig 2).
In replacement, the new panel is welded at (2, 3 Fig 2).
Holes are then punched in the corner gussets for plug welding at (1 Fig 2) as there is no access for a resistance spot welder at these points.

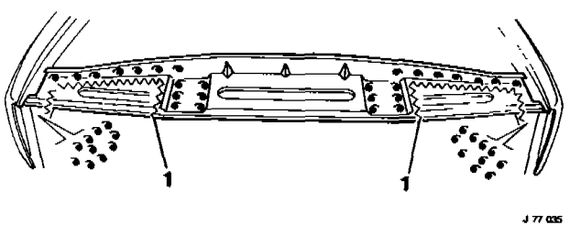


Fig 1

Painting: See Section 77.00.00.

Associated Panel:
Refit/replace bonnet 77.15.01.

Replace Parts: Replace parts in reverse order of removal.
Reconnect battery and alternator, test those electrical items that have been removed and replaced. Align headlamps.

0055G

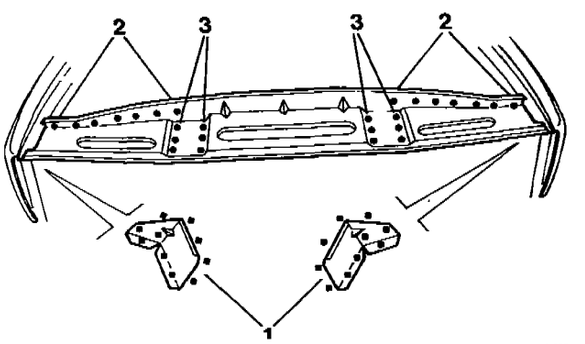


Fig 2

FRONTWING

RENEW **77.25.01**

Disconnect battery and side/flasher lamp unit RH and LH.
Remove:
Front bumper assembly with flasher lamp units.
Disconnect horns (Fig 1).

Remove:
Grille, front screen-washer bottle filler neck bracket, headlamp unit, front wheelarch splashguard main section and front section, battery (LHD only), radiator expansion tank (LHD only), flasher repeater lamp unit, front spoiler, headlamp/front screenwasher bottle (RHD only) and bumper side mounting.
Lay aside bonnet front edge weather-seal and scuttle weatherseal.
Remove 13 mounting bolts to body and remove panel from vehicle.
Offer Up Panel: Offer up new panel, check alignment and remove for painting.
Painting: See Section 77.00.00.

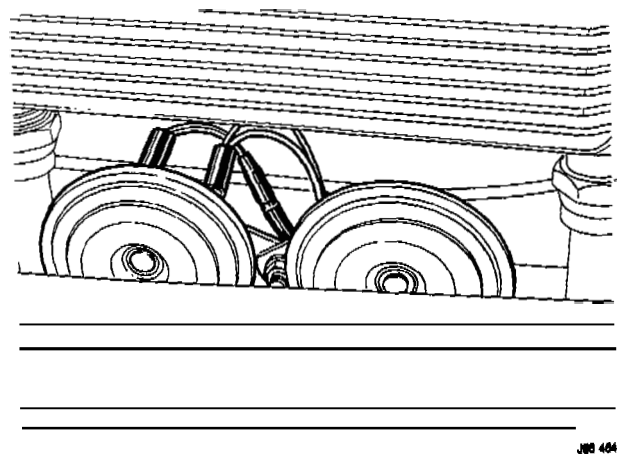


Fig 1

Refit Panel: Offer up new panel, replace mounting bolts to body, check alignment and tighten bolts.
Replace Parts: Replace parts in reverse order of removal.
Reconnect battery, test those electrical items that have been removed and replaced.
Align headlamp.

FRONTDOORSKIN

RENEW **77.20.02**

Remove:
Front door.

Panel Replacement: Panel removal and replacement is to the method detailed in Section 77.10.01-07 with the following variations: In replacement the window aperture reinforcement position is marked on the new panel and adhesive is applied to the outer flanges prior to offering up to the frame (1 Fig 2). A new anti-drum pad is fitted to the new panel before painting.

Painting: See Section 77.00.00.

Refit/replace the Door.
Refit/replace Parts.

0055G

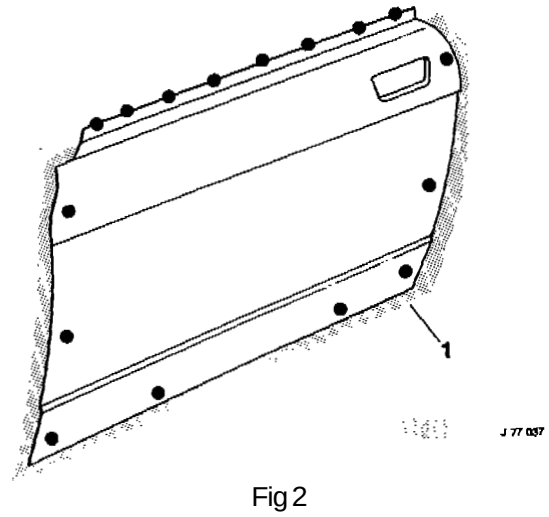


Fig 2

REAR DOORSKIN

RENEW 77.20.04

Remove:
Rear door.
Upper and lower hingesfrom door.

Panel Replacement: Panel removal and replacement is to the method detailed in Section 77.10.01-07 with the following variations: In replacement, the window aperture reinforcement position is marked on the new panel and adhesive is applied to the outer flanges prior to offering up to the frame (Fig 1). A new anti-drum pad is fitted to the new panel before painting.
Painting: See Section 77.00.00.
Refit/replace rear door 77.20.03.
Refit upper and lower hinges to door.
Replace Parts: See rear door method.

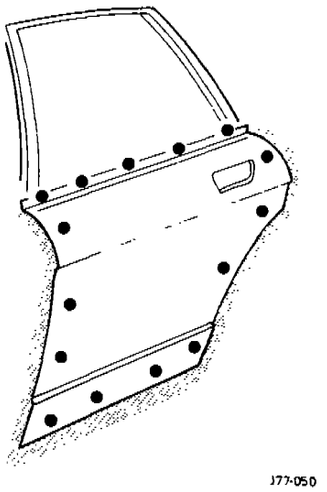


Fig 1

SILL PANELSECTION

RENEW 77.40.02

WELDING TABLE

No.	Location	Remove Factory Joint	Replace Repair Joint
1	To existing panel at rear end		1X270mm MIG seam weld
2	To inner sill upper flange at rear door aperture	15 resistance spot welds	Single row of resistance spot welds ARO arms 242A or equivalent
3	To existing panel at 'B' post		1X380mm MIG seam weld
4	To 'B' post closing panel	6 resistance spot welds	3 MIG plug welds
5	To inner sill upper flange at front door aperture	11 resistance spot welds	Single row of resistance spot welds ARO arms 242A or equivalent
6	To existing panel at front end		1X270mm MIG seam weld
7	To inner sill at lower flange	34 resistance spot welds	Single row of resistance spot welds ARO arms 242A or eauivalent
8	Weatherseal retainer to rear of 'B' post	3 resistance spot welds	4 MIG plug welds
9	Weatherseal retainer to front of 'E' post	3 resistance spot welds	4 MIG plug welds
10	Weatherseal retainer	4 resistance spot welds	4 MIG plug welds

Disconnect battery and alternator.
Remove:
Front door release lever escutchion upper capping, upper and lower door trim sections, front seat, 'A post and 'B' post lower trim sections and front sill treadplate.
Lay aside front carpet section, front door aperture beading and weatherseal.
Remove rear seat cushion and backrest, rear seat cushion insulation and rear sill treadplate.
Lay aside rear door aperture beading and rear door weatherseal.
Remove seatbelt assembly, disconnect rear door wiring and lay aside rear carpet section.

Associated Panel:
Remove rear door section 77.20.03.

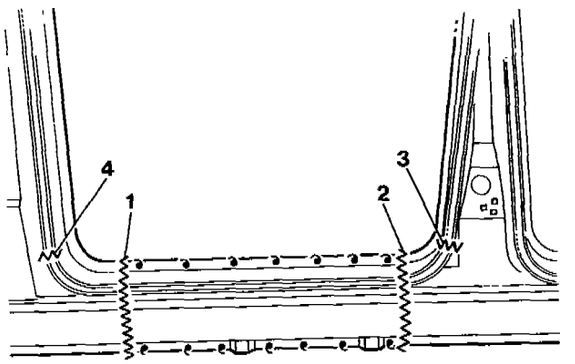
Panel Replacement: Panel removal and replacement is to the method detailed in Section 77.10.01-07 with the following varations:
During removal, the panel is cut at points (1 Fig 1) and (2 Fig 1).
The weatherseal retainers (3 Fig 1), (4 Fig 1) are then cut out.
The seal welds at (2 Fig 2) and (4 Fig 2) are dressed and the new weatherseal retainer channel sections then trimmed to fit at (5 Fig 2). The sections are then plug welded into position (1,3 Fig 2) as there is no access for a resistance spot welder at these points.

Painting: See Section 77.00.00.

Associated Panel:
Replace rear door 77.20.03.

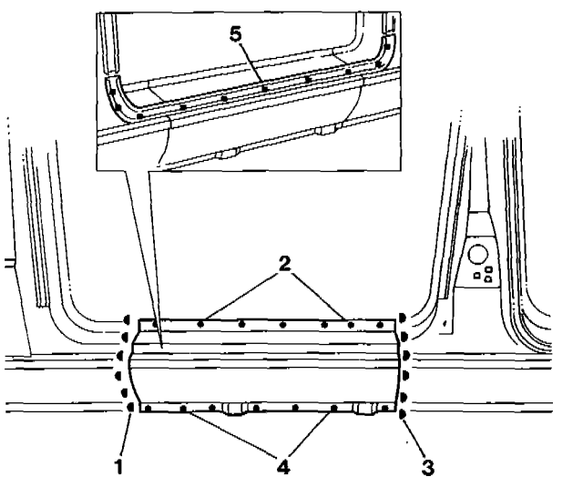
Replace Parts: Replace parts in reverse order of removal.
Reconnect battery and alternator, test those electrical items and mechanisms that have been removed and replaced.

0055G



J 77 039

Fig 1



J 77 040

Fig 2

REAR WING

RENEW

77.25.02

Welding Table

No.	Location	Remove Factory Joint	Replace Repair Joint
1	To rear panel	19 resistance spot welds (see notes) 1X mm Braze	Single row of resistance spot welds ARO arms **264A** or equivalent
2	To rear panel lower corner	2 resistance spot welds	3 resistance spot welds ARO arms 264A or equivalent 1 MIG plug weld
3	To boot floor side extension	15 resistance spot welds	Single row of resistance **spot** welds **ARO** arms **264A** or equivalent
4	To wheelarch	35 resistance spot welds (see notes)	Single row of resistance spot welds ARO arms 105010 **or** equivalent. 1X mm MIG seam weld
5	**To** dogleg and sill	30 resistance spot welds	Single row of resistance spot welds ARO arms 264A or equivalent 4 **MIG** plug welds 1X mm **MIG** seam weld
6	To rear screen panel and upper quarter	24 resistance spot welds 1X mm braze	Single row of resistance **spot** welds ARO arms 264A or equivalent 1X mm **MIG** seam weld 1X mm braze

Disconnect battery and alternator.
Remove:
Spare wheel and jack, boot mat, petrol tank cover, rear panel section and carpet, tail lamp cover and rear wing carpet section.
Lay aside boot aperture weatherseal.
Remove:
Rear bumper assembly with rear foglamp unit RH and LH, bumper iron, boot aperture, mouldings, and tail lamp unit.
Jack up rear of vehicle and place on axle stands.
Remove:
Exhaust rear section, radio aerial assembly **(RH** only), aerial sealing grommet (RH only), rear wing extractor vent box, bumper side mounting, rear seat cushion and backrest, rear seat insulation at cushion and backrest, rear parcel shelf, upper quarter trim section and rear sill treadplate.
Lay aside rear door aperture weatherseal and beading.
Remove rear door striker, quarterlight inner weatherseal, quarterlight glass, upper quarter moulding, petrol filler flap (LH only).
Lay aside rear wiring loom, boot lid wiring loom (RH only), aerial wiring (RH only), petrol filler flap wiring (LH only), braking system microprocessor wiring (LH only) and petrol tank wiring (RH only).

Remove the petrol tank.
Panel Replacement: Panel removal and replacement is to the method detailed in Section 77.10.01-07 with the following variations:
During removal, the panel is cut at points (1 Fig 1) and (2 Fig 1) in the welding diagram and the bulk removed.
The resistance spot welds at the inturned flange beneath the rear screen panel may then be cut out and the metal remnant removed. It is necessary to use a body chisel and pincers when removing the remnant at the wheel-arch as adhesive is used in this area which creates difficulties in removal.

When removing the resistance spot welds at (1 Fig 2) it is necessary to cut out the welds on the outer face and bend the flange upwards as shown in (1 Fig 3), in order to gain access to the second row of resistance spot welds beneath.

During replacement, holes are punched in the new panel for plug welding at (1 Fig 2) and (5 Fig 2) as there is no access for a resistance spot welder at these points.
Plug welds are also made at (3,4,6 Fig 2) using the holes left by the resistance spot weld cutter.
Adhesive is applied to the area shown in the welding diagram before offering the panel up to the vehicle (see page 77-04 for sealants chart).

Painting: See Section 77.00.00.

Replace Parts: Replace parts in reverse order of removal.
Reconnect battery and alternator, test those electrical items and mechanisms that have been removed and replaced.

0055G

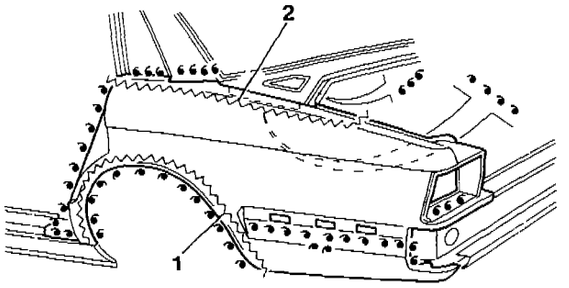


Fig 1

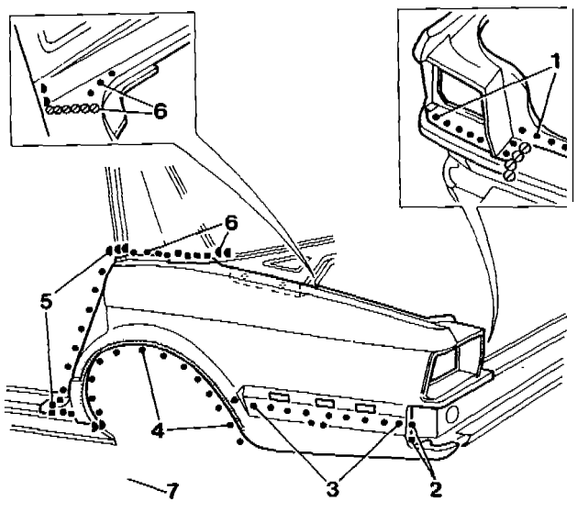


Fig 2

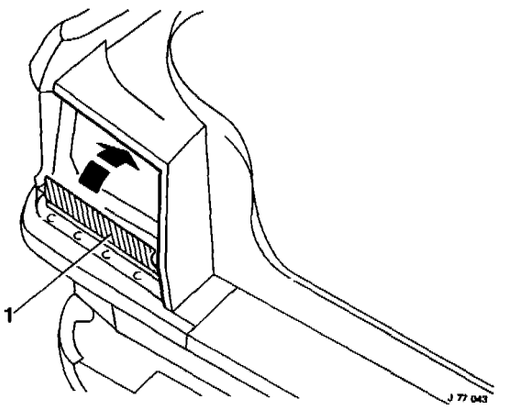


Fig 3

REAR PANEL ASSEMBLY

RENEW **77.35.01**

Welding Table

No.	Location	Remove Factory Joint	Replace Repair Joint
1	To inner reinforcement lower flange	20 resistance spot welds	20 MIG plug welds
2	To boot floor rear edge and side extension	50 resistance spot welds	Single row of resistance spot welds ARO arms 264A or equivalent.
3	To rear wing at side of tail lamp aperture RH and LH	11 resistance spot welds 2X mm brazes each side	11 MIG plug welds 2X mm brazes each side
4	Tail lamp panel RH and LH to rear panels at lower edge	10 resistance spot welds each side	Single row of resistance spot welds each side ARO arms 242A or equivalent
5	Tail lamp panel RH and LH to rear panel at vertical gusset	8 resistance spot welds each side	Single row of resistance spot welds each side ARO arms 242A or equivalent
6	Rear panel to drain channel RH and LH	5 resistance spot welds 1X100mm braze each side	Single row of resistance spot welds ARO arms 242A or equivalent 1X100mm braze each side
7	Tail lamp panel to corner gusset RH and LH	10 resistance spot welds 1X35mm MIG seam weld each side	10 MIG plug welds 1X35mm MIG seam weld each side
8	To rear wing at drain channel RH and LH	1X60mm MIG seam weld 1X60mm braze each side	1X60mm MIG seam weld 1X60mm braze each side
9	Corner gusset to rear wing RH and LH	5 resistance spot welds each side	5 MIG plug welds each side

Disconnect battery and alternator.
Remove:
Spare wheel and jack, boot mat, petrol tank cover, rear panel trim section and carpet, tail lamp cover RH and LH, rear wing carpet section RH and LH, tail lamp unit RH and LH.
Jack up vehicle, and place on axle stands.
Remove exhaust rear section RH and LH.
Panel Replacement: Panel removal and replacement is to the method detailed in Section 77.10.01-07 with the following variations:
During removal, the panel is cut at points (1 Fig 1) and the tail lamp panels removed. The rear wings are then moved outwards to assist with removing the bulk of the panel. In replacement, holes are made in the new assembly for plug welding at (3 Fig 2) and (7 Fig 2). as there is no access for a resistance spot welder. Plug welds are also made at (3 Fig 2) and (9 Fig 2) using the holes left by the resistance spot weld cutter. Metal-to-metal adhesive is applied at the areas shown in the diagram before offering up (10 Fig 2).
Painting: See Section 77.00.00.
Replace Parts: Replace parts in reverse order of removal.

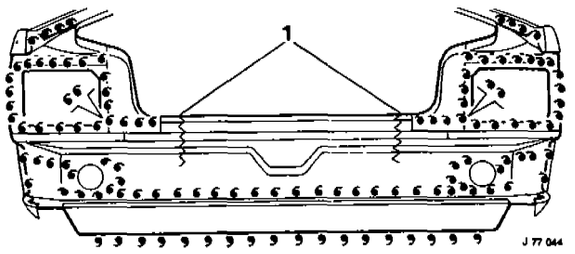


Fig 1

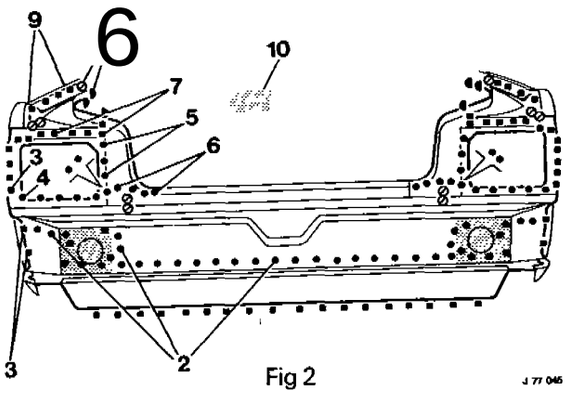


Fig 2

FRONT SCREEN

RENEW **77.45.02**

Open the bonnet and both front doors.
Remove both wiper arms.
Remove the plenum chamber finisher.
Displace and remove both screen finishers.
Release the screen seal at both A posts. Displace and remove the seal.
Protect the paint around the windscreen aperture using suitable masking tape.
From inside the car, displace the flange dam, noting that the dam remains captive along the lower edge.
To release the screen from the aperture, cut through the 'Betaseal' as follows:
Carefully pierce an access hole through the 'Betaseal' at the top of the A post.
Fit a length of cheese wire through the hole. Secure both ends of the cheese wire to a suitable pair of handles, and carefully cut the screen from the aperture (Fig 1).
CAUTION:' DO NOT 'CRANK THE SCREEN FORWARD TO GAIN ACCESS TO THE BETASEAL AT THE LOWER EDGE OF THE APERTURE FLANGE. THE FLANGE WILL DISTORT, CAUSING THE SCREEN TO FOUL THE WIPER ARM SPRING.
NOTE: Extra care must be taken when cutting 'Betaseal' at the screen corners.
Alternatively, use a suitable vibro-knife bonded glass remover. DO NOT, however, use a 'hot knife', which can cause distortion, trim damage, etc.

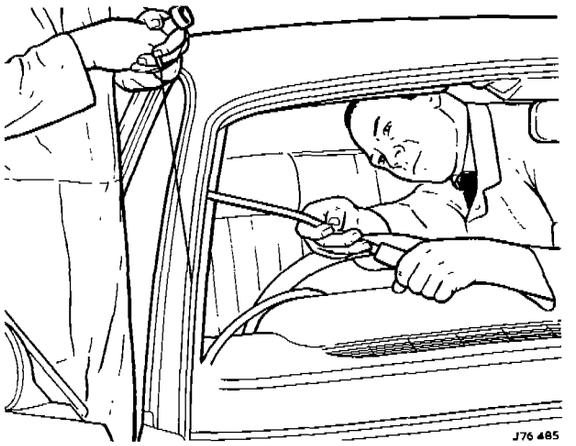


Fig 1

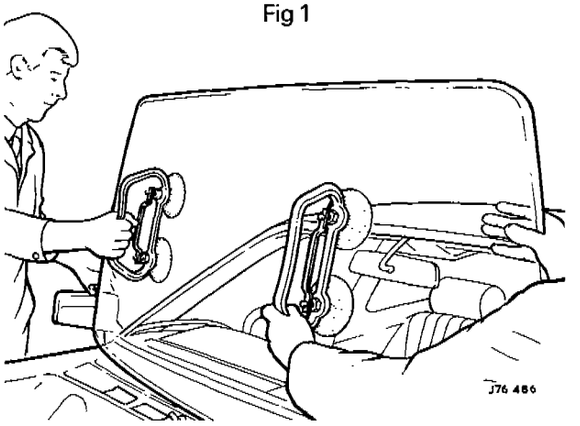


Fig 2

Fit and align lifting handles to the screen. Lower the bonnet. Displace and remove the screen (Fig 2).
Remove the flange dam.
Remove the lifting handles and discard the screen.

Clean the aperture flange with a sharp blade, taking care not to damage the paintwork.
NOTE: A thin layer of sealant may be left on the flange.

Clean the replacement screen edge and aperture flange with spirit wipe. Apply glass primer to the screen.
Apply screen body primer to the flange.
Fit the flange dam to the flange, note the flat side of the dam goes to the inside of the car (Fig 3).
Make two wooden support blocks 8mm thick. Position the blocks on to the flange (Fig 4).
Apply a bead of 'Betaseal' to the screen edge (Fig 1 page 23).
Attach the lifting handles to the screen, carefully fit and align the screen to the aperture, using the wooden blocks as support.
NOTE: Ensure that the gap between screen and A post is equal both sides.
Fully seat the screen to the aperture flange.
Open the bonnet. Remove the masking tape from the aperture.

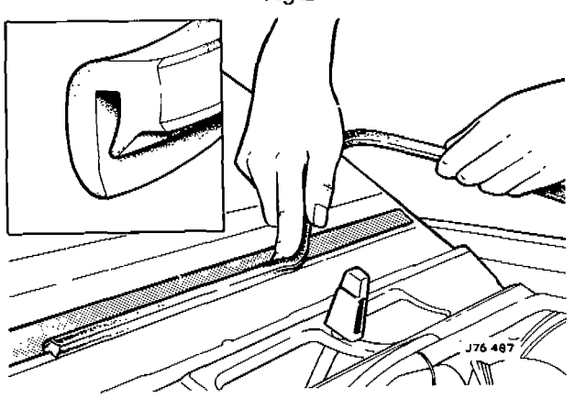


Fig 3

Apply 'Solumin' solution to the screen seal, a suggested method is shown in Fig 2 page 23.
Fit and fully seat the seal to the screen/body (during the Operation, remove the wooden support blocks).

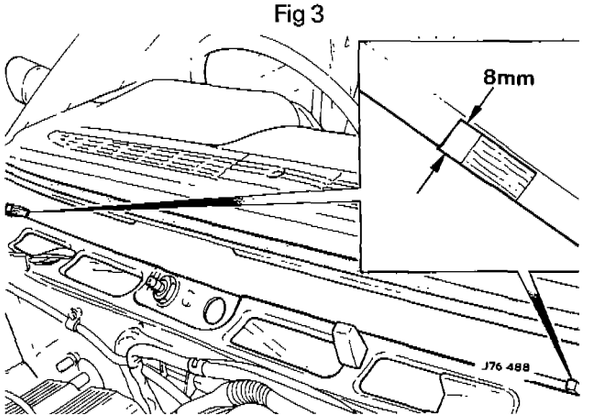


Fig 4

Clean and remove all moisture from between the seal and the glass.
Apply 'Alphaseal 121' between the screen seal and the screen, DOWN THE A POSTS ONLY.
Apply 'Solumin' solution to the screen seal outer face and, starting at the top of the A post, slide the finishers down into the seal (Fig 3). Seat the top of the finisher with a glazing hook. Fit the finisher clip at the top of the screen (Fig 4).
Remove all excess sealant/solution from the screen. Secure/support the screen with tape.
After the screen has bonded (approximately 2 hours), remove the tape and clean the screen and surrounding area.
Refit the plenum chamber finisher.
Refit the wiper arms. Close the bonnet.

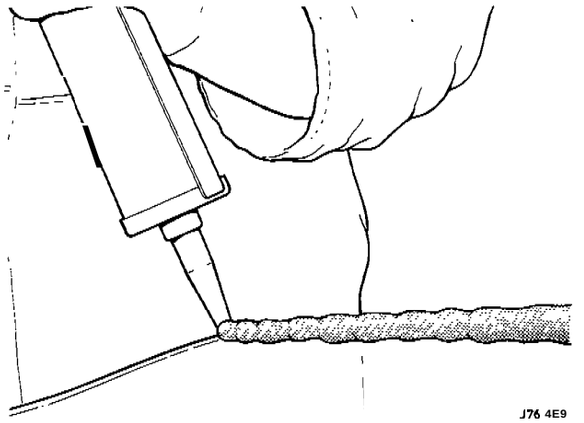


Fig 1

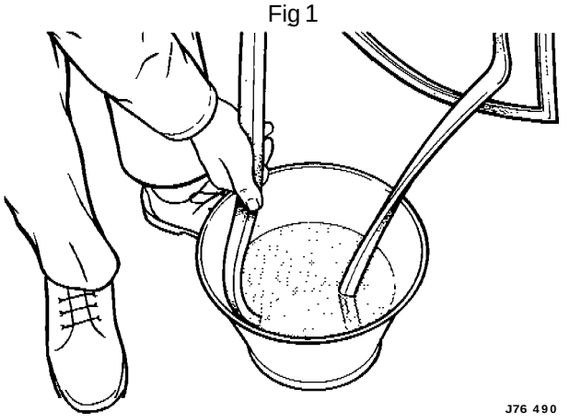


Fig 2

DATA

TORQUE FIGURES

Wiper arm securing nut 17-19Nm

SPANNER SIZES

17mm

SEALANTS/LUBRICANTS

Alphaseal 121
Betaseal
Screen body primer
Screen glass primer
Solumin
White Spirit

REAR SCREEN

RENEW **77.45.03**

Displace and remove the screen finishers.
Release the screen seal at the E **posts.** Displace and remove the seal.
Protect the paint around the screen aperture using suitable masking rape.
Disconnect the heated screen electrical connections.
To release the screen from the aperture, cut through the 'Betaseal' as follows:
CAUTION: IF USING CHEESE WIRE, FIRST REMOVE THE REAR QUARTER UPPER TRIM PADS AND PARCEL SHELF.
Carefully pierce an access hole through the 'Betaseal' at the top of the A post.
Fit a length of cheese wire through the hole. Secure both ends of the cheese wire to a suitable pair of handles, and carefully cut the screen from the aperture.
NOTE: Extra care must be taken when cutting 'Betaseal' at the screen corners.
Alternatively, use a suitable vibro-knife bonded glass remover. DO NOT, however, use a 'hot knife', which can cause distortion, trim damage, etc.
Fit and align lifting handles to the screen. Displace and remove the screen. Remove the flange dam. Remove the lifting handles and discard the screen.

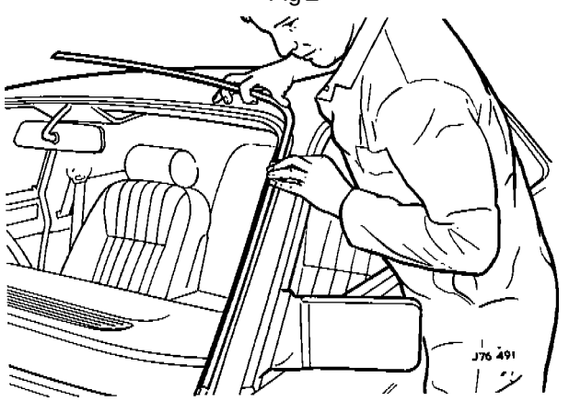


Fig 3

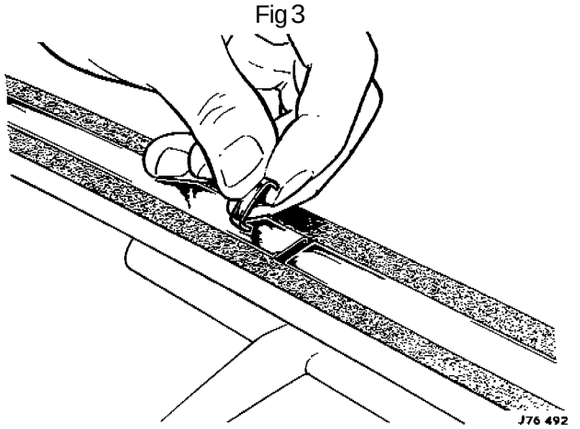


Fig 4

Clean the aperture flange with a sharp blade, taking care not to damage the paintwork.
NOTE: A thin layer of sealant may be left on the flange.
Clean the replacement screen edge and aperture flange with spirit wipe. Apply glass primer to the screen.
Apply screen body primer to the flange.
Fit the flange dam, note the flat side of the dam goes to the inside of the car.
Make two wooden support blocks 8mm thick. Position the blocks on to the flange.
Apply a bead of 'Betaseal' to the screen edge (Fig 1).
Attach the lifting handles to the screen, carefully fit and align the screen to the aperture, using the wooden blocks as support.
NOTE: Ensure that the gap between screen and E post is equal both sides.
Fully seat the screen to the aperture flange.
Remove the masking tape from the aperture.
Apply 'Solumin' solution to the screen seal, a suggested method is shown in Fig 2.
Fit and fully seat the seal to the screen/body (during the operation, remove the wooden support blocks). Clean and remove all moisture from between the seal and the glass.
Apply 'Alphaseal 121' between the screen seal and the screen, DOWN THE E POSTS ONLY.
Apply 'Solumin' solution to the screen seal outer face and slide the finisher down into the seal. Fit the lower edge finisher. Fit the finisher clips.
Remove all excess sealant/solution from the screen. Secure/support the screen with tape.
Refit the trim panels (if removed).
Reconnect the heated rear screen connections.
After the screen has bonded (approximately 2 hours), remove the tape and clean the screen and surrounding area.

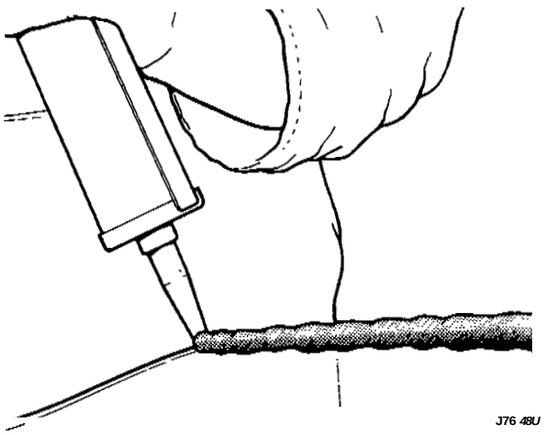


Fig 1

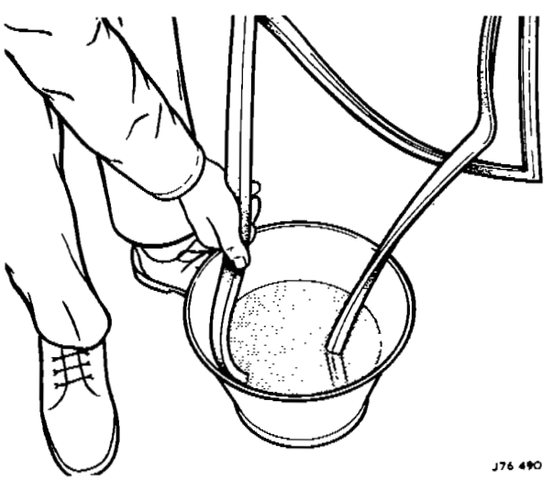


Fig 2

SEALANTS/LUBRICANTS

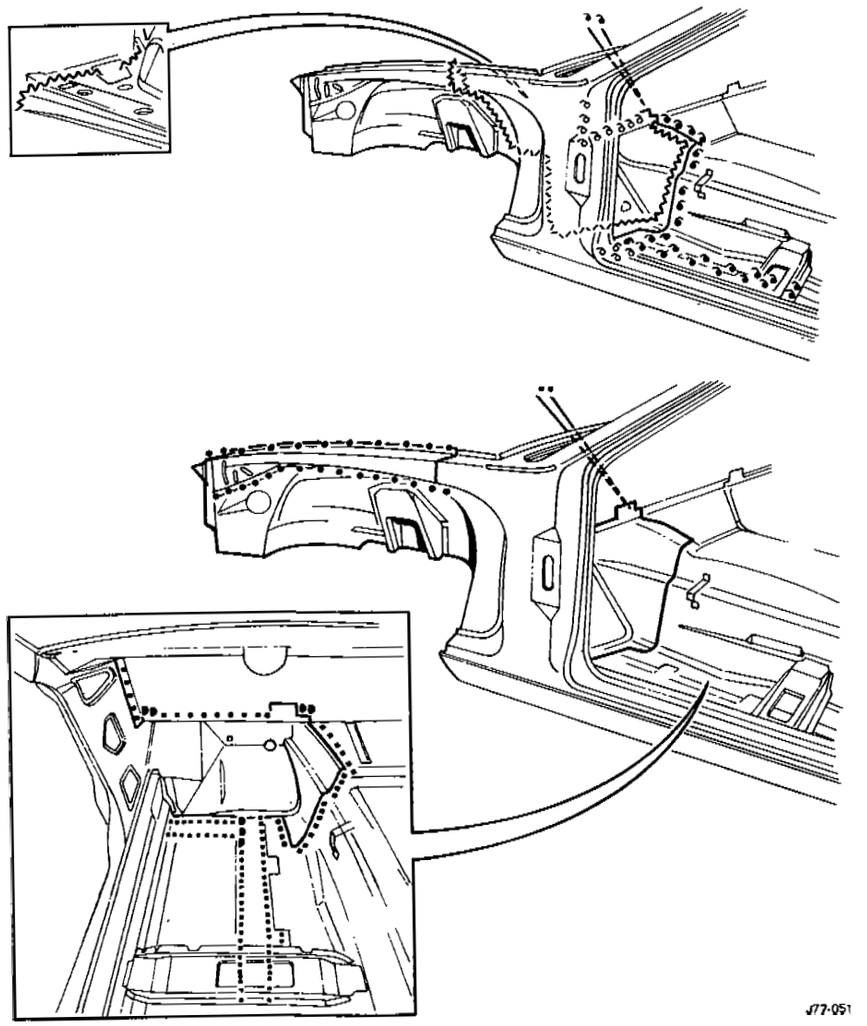
Alphaseal 121
Betaseal
Screen body primer
Screen glass primer
Solumin
White Spirit

FRONT END REPAIRS–COMBINATION 2

77.50.04

RENEW

WELDING DIAGRAM



WELDING TABLE

No.	Location	Remove Factory Joint	Replace Repair Joint
1	Chassis leg and out-rigger to floor pan	66 resistance spot welds 3 MIG seam welds	20 MIG plug welds 3 MIG seam welds
2	Flitch assembly to transmission tunnel	15 resistance spot welds	15 MIG plug welds
3	Flitch assembly to bulkhead	22 resistance spot welds 2 MIG seam welds	22 MIG plug welds 2 MIG seam welds
4	Flitch reinforcement to flitch assembly	Removed with panel bulkhead	Single row of resistance spot welds ARO arms 242A and 245A or equivalent

Remove the bonnet assembly 76.16.01.
Remove:
Engine/gearbox assembly 12.41.01/2/20.
Radiator and oil cooler, expansion tank and PAS reservoir.
Front crossmember 76.10.05.
PAS rack 57.10.01.
Steering column 57.40.02/5.
Front to rear fuel and brake pipes.
Brake pipes across the bulkhead.
PAS and air ducting brackets.

Disconnect:
Steering column lower joint (1-3 Fig 1).
Shock absorbers and flexible brake **hoses.**

Remove:
Steering column bracket and UJ assembly (1-4 Fig 2).
Brake/throttle/clutch pedal assemblies.
Remove:
Bonnet catches, locks and control cable assemblies, weatherseals and gas struts.
Front bumper/mounting assembly, radiator grille and surrounds, LH and RH wheel-arch shields, lower front spoiler and washer reservoir.
Front seats, lower 'A and 'B' post trims, front door beading and weatherstrip, rear seat cushion and insulation, and front seat belt assembly.
Battery and battery tray, vacuum bottle assembly, driver's well insulation, scuttle panel and jets, all blanking grommets in bonnet/engine bay area.

Lay aside:
Rear carpets, wiring at upper 'A post and wiring at transmission tunnel.
Remove:
Bonnet lamps and wiring, horns and wiring, LH and RH headlamps, LH and RH repeater flashers, electric fan, and bonnet lamp switch.
LH and RH dash trimboard, instrument panel and housing 88.20.01/13, centre air vents and fascia board 76.46.01.
Processor units, heater blower unit, LH and RH headlamp relay module, centre console, heater box and all bulkhead insulation.
Wiper motor assembly with jets, fascia board brackets, 'A post bracket, positive earth terminal at bulkhead, tunnel carpet and insulation and tunnel wiring loom.

Lay aside:
LH wiring loom to interior, RH wiring loom to interior.
Remove panels:
RH and LH front wings.
Radiator support panel.
Headlamp support panel RH.
Bonnet hinge panel.
Crossmember/closing panel.
Chassis leg mounting RH.
Chassis leg (RH sectioned).
Flitch assembly LH.
Flitch closing panel RH.
Flitch extension panel RH.
Flitch reinforcement panel RH and LH.

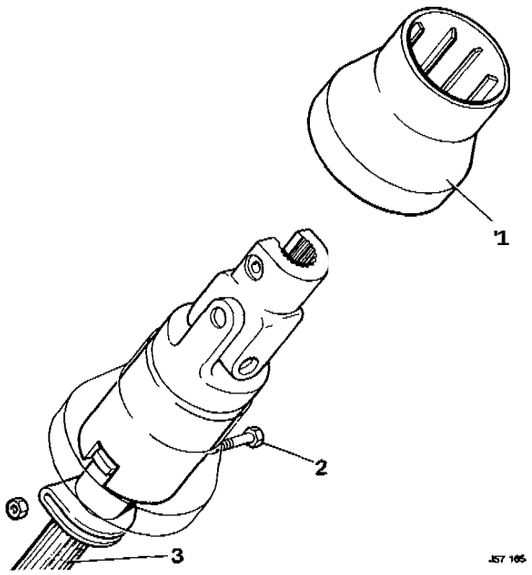


Fig 1

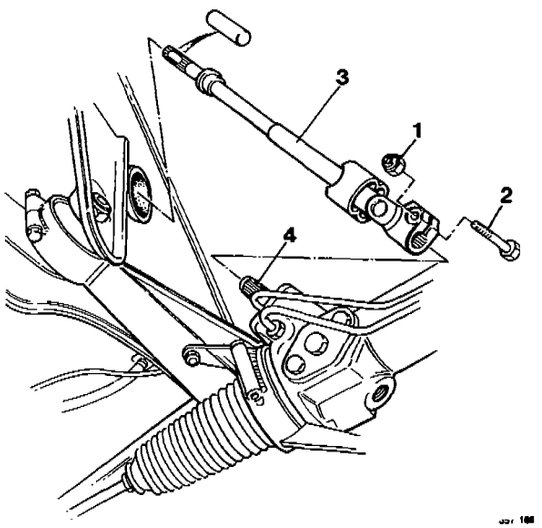
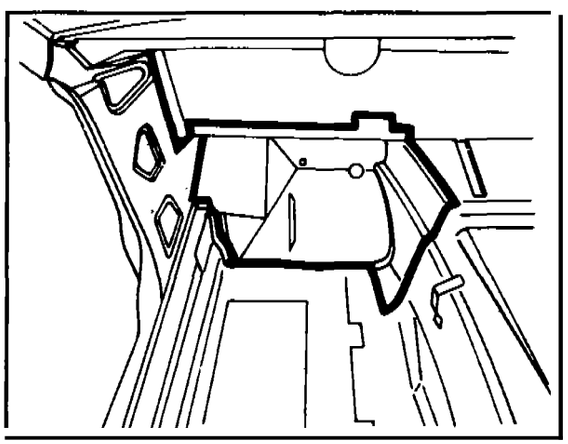
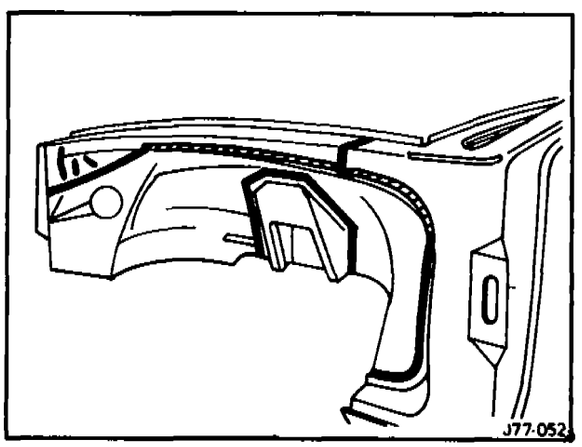


fig 2

Panel Replacement:
Panel removal and replacement is to the method detailed in Section 77.10.01**-07.**

SEALING DIAGRAMS





Painting: See Section 77.00.00.

Replace Parts: Replace parts in reverse order of removal.
Reconnect battery and alternator, test those electrical items that have been removed and replaced.
Bleed the brakes 70.25.02.
Check/adjust the front wheel **alignment 57.65.01.**
Align headlamps.

0055G

SIDE REPAIRS – COMBINATION 1

RENEW **77.50.01**

Disconnect the battery, alternator and injection wiring loom to the engine.

Jack up the vehicle and support with axle stands.
Remove:
Road wheels.
Steering column and bracket 57.40.02/5.
Brake/throttle/clutch pedal assemblies.

Disconnect:
Heater hose through the bulkhead.

Remove:
Radiator expansion tank 26.15.01 (Fig 1).
Bonnet weatherseals, front bumper/mounting assembly, radiator grille and surrounds.
Wheel-arch shield, lower front spoiler and washer reservoir.
Front seats, lower 'A and 'B' post trims, front door beading and weatherstrip.
Front sill treadplate (1,2 Fig 2), and front seat belt assembly.

Battery and battery tray,
Vacuum bottle assembly, driver's well insulation, scuttle panel and jets.
Gutter moulding and retainers.
Front screen and mouldings.
'B' post outer finisher and front door trim.

Lay aside:
Carpeting.

Remove:
Headlamp, repeater flasher and dash trimboard.
Instrument panel and housing 88.20.01/13.
Centre air vents and fascia board 76.46.01.
Processor units, heater blower unit and all bulkhead insulation.
Wiper arm, fascia and fascia relay bracket,

Lay aside:
Wiring loom to vehicle interior.

Remove panels:
Front wing.
Front door.
Weatherseal panel.
Inner 'A post.
Sill closing panel.
Inner sill (sectioned).
Bodyside (sectioned).

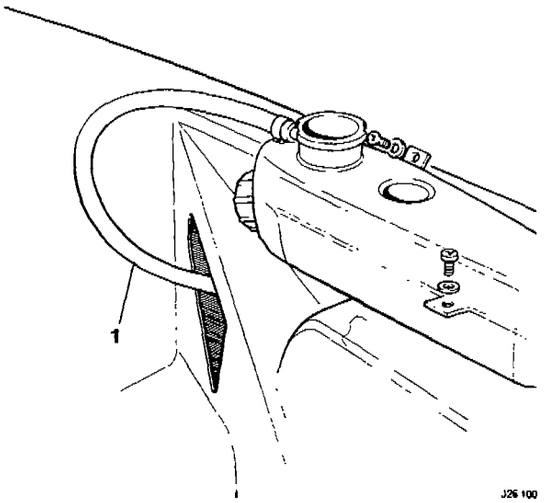


Fig 1

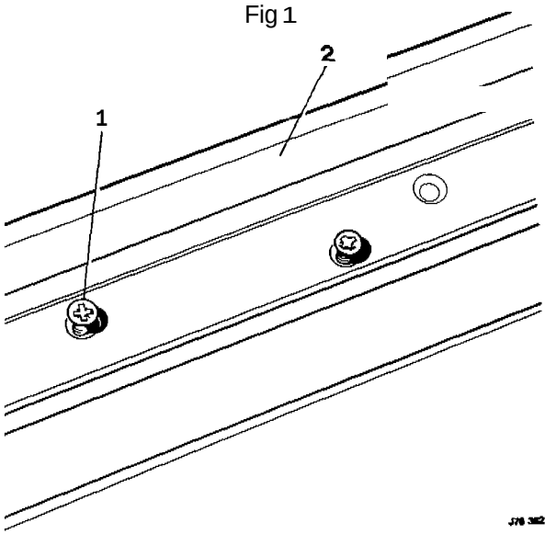
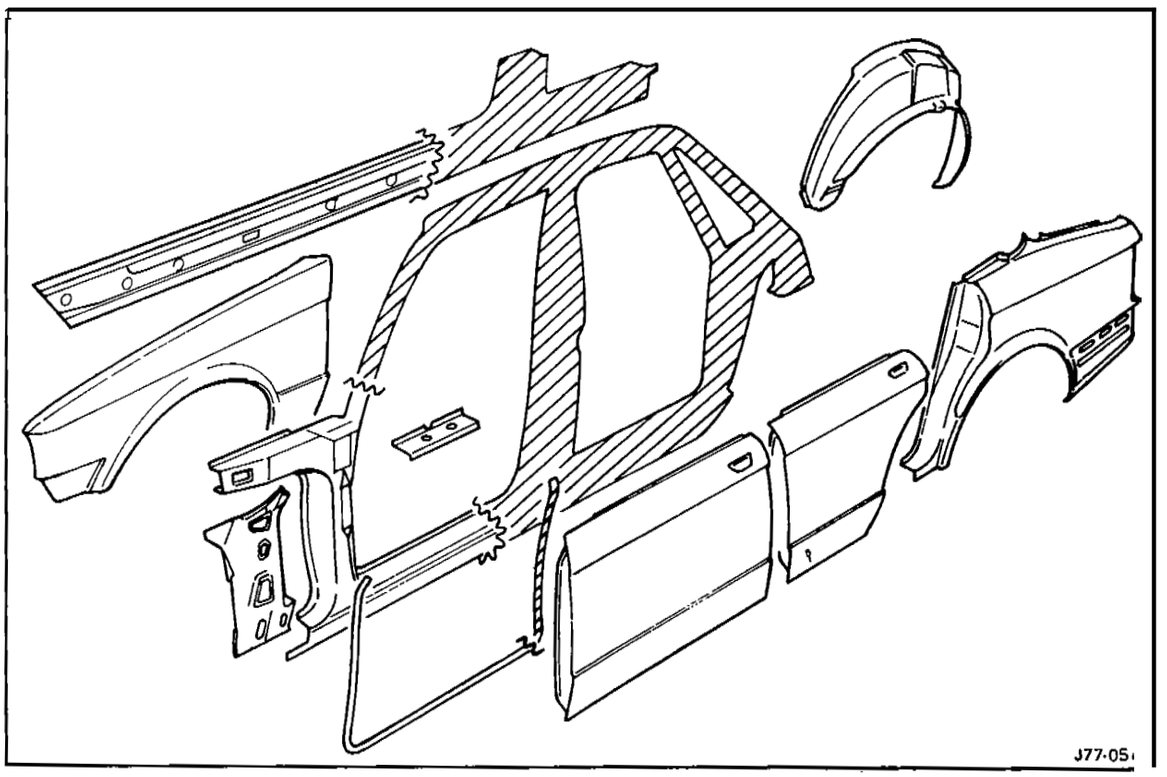


Fig 2



Panel Replacement:
Panel removal and replacement is to the method detailed in Section 77.10.01-07.

Painting: See Section 77.00.00.

Replace Parts:
Replace parts in reverse order of removal.
Reconnect battery and alternator, test those electrical items that have been removed and replaced.
Bleed the brakes 70.25.02.
Check/adjust the front wheel alignment 57.65.01.
Align headlamps.

0055G

SIDE REPAIRS – COMBINATION 2

RENEW **77.50.02**

Disconnect the battery.
Jack up the vehicle and support with axle stands.
Remove:
Exhaust rear section, rear lamp cluster, rear lamp relay module and electric aerial.
Petrol tank 19.55.01.
Rear screen and mouldings.
Lay aside:
Rear screen wiring, and rear carpeting.
Wiring loom to vehicle interior.
Remove:
Rear seat cushion, seat back and insulation.
Rear sill treadplate (1,2 Fig 1), rear door beading and weatherseal, spare wheel and jack.
Boot mat (Fig 2), petrol tank cover, rear panel trim, rear wing carpet and boot lid weatherseal.
Rear bumper assembly, rear wing vent box, all insulation, rear parcel shelf, upper rear wing trim and rear door striker.
Upper quarter finisher, upper seat belt mounting, rear inertia reel assembly and rear door trim.
Remove panels:
Outer whee-arch.
Rear wing.
Rear **door.**
Panel Replacement:
Panel removal and replacement is to the method detailed in Section 77.10.01-07.
Painting: See Section 77.00.00.
Replace Parts:
Replace parts **in** reverse order of removal.
Reconnect battery and alternator, test those electrical items that have been removed and replaced.

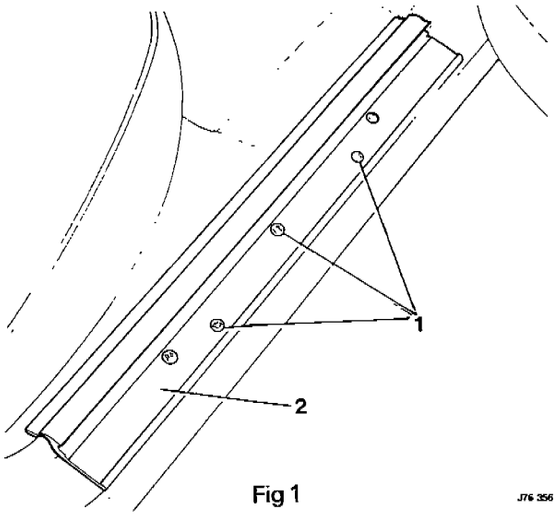


Fig 1

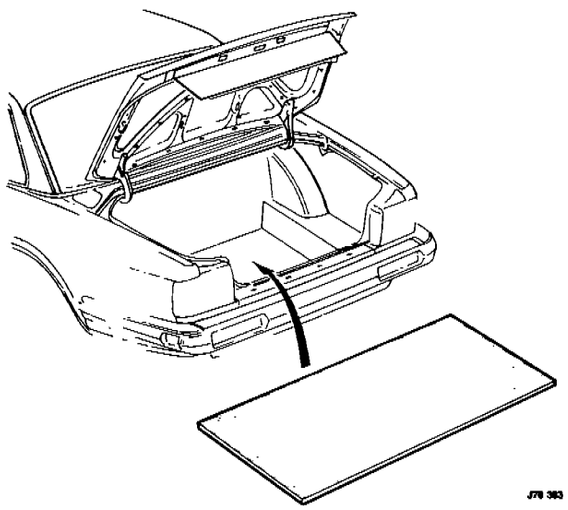
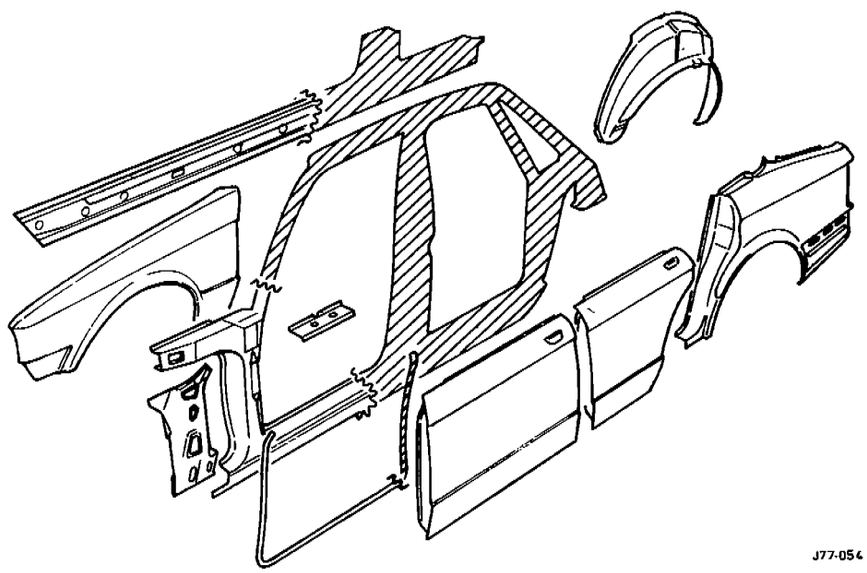


Fig 2



J77-054

REAR END REPAIRS – COMBINATION 1

RENEW *77.50.05*

Disconnect the battery, alternator and petrol tank wiring.
Jack up the vehicle and support with axle stands.
Remove:
Exhaust rear and middle sections.
Handbrake cable 70.35.16.
Rear axle assembly 51.25.13.
Rear seat heat shield and boot floor heat shield.
Rear shock absorbers, bump stops and petrol tank 19.55.01.
Rear flexible brake hoses.
Lay aside:
Front to rear fuel pipes and pump.
Rear lamp cluster, rear lamp relay module, RH and LH number plate lamps and electric aerial.
Rear screen and mouldings.

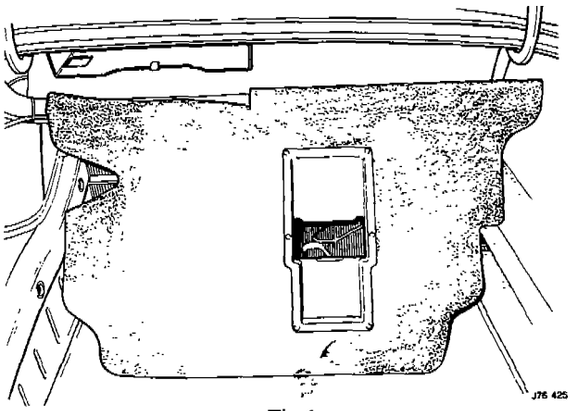


Fig 1

Lay aside:
Rear screen wiring.
Rear carpeting.
Wiring loom to vehicle interior.

Remove:
Rear seat cushion, seat back and insulation.
Rear sill treadplate.
Rear seat cushion, seat back and insulation.
Rear sill treadplate, rear door beading and weatherseal, spare wheel and jack.
Boot mat, petrol tank cover, rear panel trim (Fig 1), rear wing carpet (Fig 2) and boot lid weatherseal.
Rear bumper assembly, boot lip finishers, rear wing vent box, all insulation, rear parcel shelf, upper rear wing trim and rear door striker.

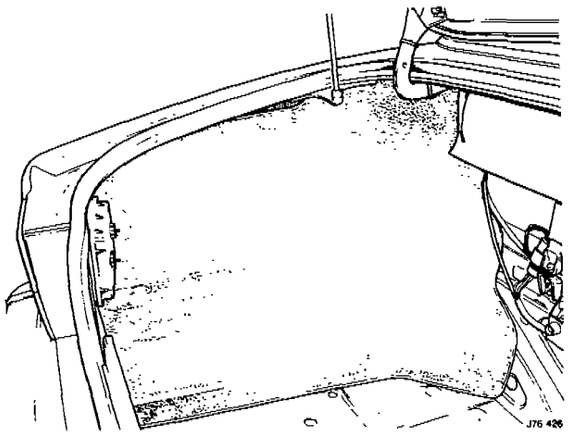


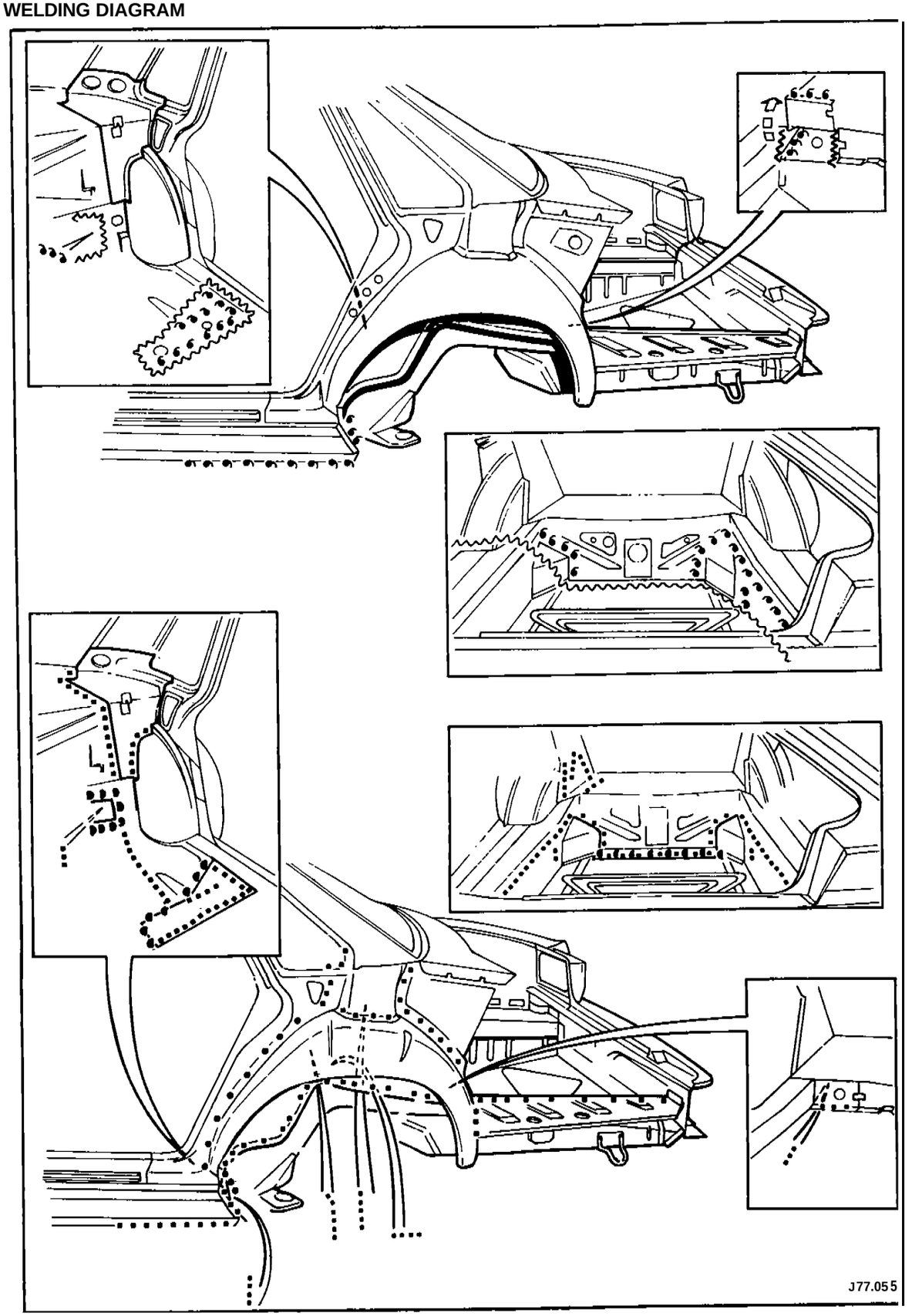
Fig 2

Remove:
Rear wing chrome finisher, rear seat belt locks and mountings, boot lid damper ball joint and boot lid striker.
Headlining rear finisher, petrol tank and wheel-arch insulation, boot and rear floor grommets and boot lid trim.

Lay aside:
RH and LH wiring looms to vehicle interior, boot lid wiring loom and rear screen wiring.
Rear carpeting.

Remove panels:
Boot lid.
Rear wing.
Wheel-arch including top box and gusset.
Rear panel.
Boot floor extension panel.
Boot floor sectioned).
Chassis leg.

WELDING DIAGRAM



NOTE: For rear wing and rear panel welding diagrams, see 77.25.02 and 77.35.01.

WELDING TABLE

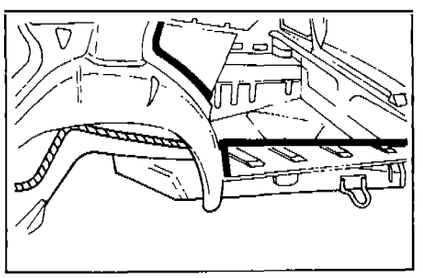
No.	Location	Remove Factory Joint	Replace Repair Joint
1	Rear wheelarch assy and chassis leg to floorpan and heelbaard	Removedwith panel bulk	47 **MIG** plug welds
2	Rear wheelarch assy to heelboard interior	3 MIG plug welds	3 **MIG** plug welds **1 X MIG** seam welds
3	Rear chassis leg to floor and rear seat crossmember		20 **MIG** plug welds 2 X **MIG** seam welds
4	Rear chassis leg to sill lower flange	9 resistancespotwelds	9 MIG plug welds
5	Rear wheelarch assy to inner wing at vertical gusset	Removedwith panel bulk	Single row of resistancespotwelds ARO arms 242A or equivalent 34 **MIG** plug welds
6	Rear chassis leg to inner sill rear flange	3 resistancespot welds	3 resistance spot welds **ARO** arms 242A or equivalent
7	Rear wheelarch to chassis leg	Removedwith panel bulk	22 **MIG** plugwelds
8	Bootfloor side extension to chassis leg	Removedwith panel bulk	12 MIG plug welds
9	Bootfloor section to chassis leg RH and LH	29 resistancespot welds each side	**25 MIG** plug welds each side
10	Bootfloor section to rear bulkhead at end section RH and LH	10 resistance spot welds each side	10 **MIG** plug welds each side
11	Bootfloor section existing panel at rear bulkhead lower flange		30 **MIG** plug welds 10 MIG tack welds
12	Rear wheelarch assy to boot side reinforcement	Removedwith panel bulk	16 MIG plug welds
13	Rear wheelarch assy to boot floor crossmember	3 **MIG** plug welds	**6 MIG** plug welds

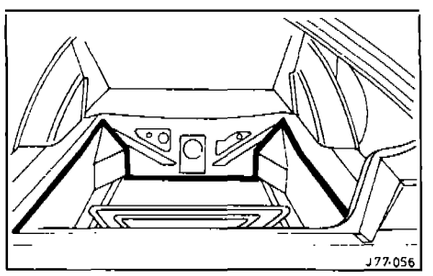
Panel Replacement:
Panel removal and replacement is to the method detailed in Section 77.10.01-07.
Sealing diagrams are shown below.

Painting: See Section 77.00.00.

Replace Parts:
Replace parts in reverse order of removal.
Reconnect battery and alternator, test those electrical items that have been removed and replaced.
Bleed the brakes 70.25.02.

SEALING DIAGRAMS





CONTENTS

DESCRIPTION	OPERATION	OPERATION No	PAGE No
AMBIENT TEMPERATURE SENSOR	RENEW	80.10.53	80-15
BLOWER MOTOR ASSEMBLY (DRIVER SIDE)	RENEW	80.20.11	80-09
BLOWER MOTOR ASSEMBLY (PASSENGER SIDE)	RENEW	80.20.12	80-10
BLOWER MOTOR ISOLATION RELAY (DRIVER SIDE)	RENEW	80.10.41	80-10
BLOWER MOTOR ISOLATION RELAY (PASSENGER SIDE)	RENEW	80.10.42	80-11
BLOWER MOTOR HIGH SPEED RELAY	RENEW	80.10.39	80-11
BOOT VENTILATOR OUTLET	RENEW	80.15.66	80-18
CENTRE FASCIA VENT FLAP SERVO	RENEW	80.15.51	80-13
CENTRE FASCIA VENT OUTLET	RENEW	80.15.48	80-17
CENTRE VENTILATOR	RENEW	80.15.24	80-17
CENTRE VENT VACUUM SOLENOID	RENEW	80.10.47	80-14
COOLANT TEMPERATURE SWITCH	RENEW	80.10.51	80-15
COOLANT VALVE VACUUM SOLENOID	RENEW	80.10.50	80-15
DE-FROST VACUUM SOLENOID	RENEW	80.10.49	80-14
DEMISTER DUCTS	RENEW	80.15.02	80-16
DEMISTER DUCTS OUTLET	RENEW	80.15.53	80-18
DEMISTER FLAP SERVO	RENEW	80.15.52	80-13
DRIVERS VENT OUTLET	RENEW	80.15.49	80-17
ELECTRONIC CONTROL MODULE	RENEW	80.10.52	80-08
HEATER COOLANT VALVE	RENEW	80.10.16	80-09
HEATER MATRIX	RENEW	80.20.29	80-08
HEATER MATRIX PIPE GASKET	RENEW	80.20.04	80-09
HEATER SWITCH CONTROL MODULE	RENEW	88.80.14	80-08
HEATING & VENTILATION	DESCRIPTION	80.00.00	80-04
INDEX	ILLUSTRATED	80.00.00	64-02
IN-CAR TEMPERATURE SENSOR	RENEW	80.10.54	80-16
LOWER SERVO MOTOR	RENEW	80.10.46	80-12
LOWER SERVO MOTOR FEEDBACK POTENTIOMETER	RENEW	80.10.43	80-12
PASSENGER VENT OUTLET	RENEW	80.15.50	80-18
RE-CIRCULATION VACUUM SOLENOID	RENEW	80.10.48	80-14
SOLAR SENSOR	RENEW	80.10.55	80-16
UPPER SERVO MOTOR	RENEW	80.10.45	80-11
UPPER SERVO MOTOR FEEDBACK POTENTIOMETER	RENEW	80.10.44	80-12

0209G

PAGE 80-02 RESERVED FOR ILLUSTRATED
INDEX – J80 !??

PAGE 80-03 RESERVED FOR ILLUSTRATED
INDEX KEY

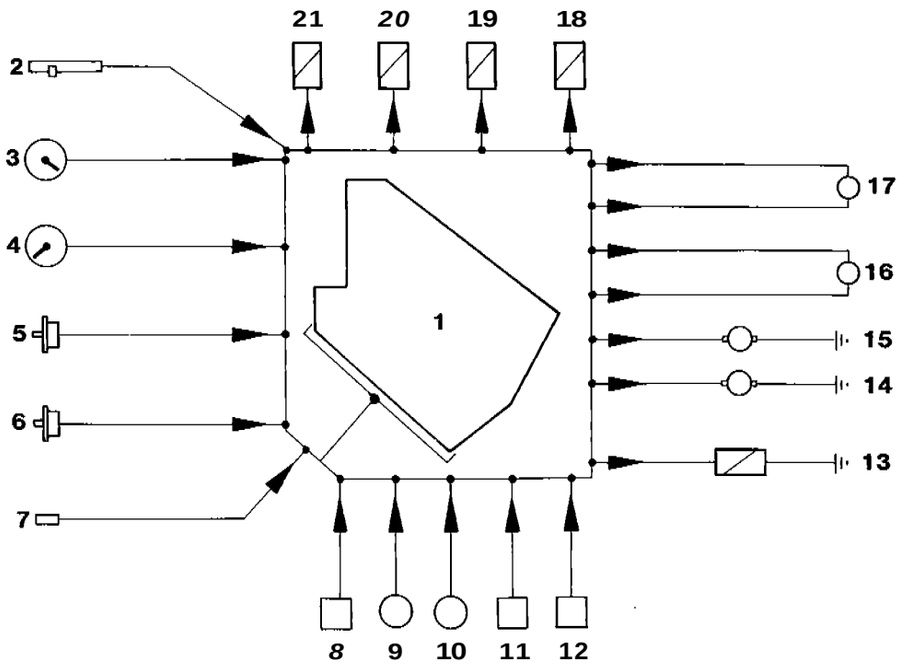
HEATING AND VENTILATION

DESCRIPTION 80.00.00

Electronic Control Module

The electronic control module is located on the right hand side of the heater box assembly.
At the heart of the electronic control module is a digital micro-processor which receives data signals from driver controlled switches, then by comparing this data with the signals received from the various temperature sensors and feedback devices it calculates the output voltages needed to operate the blower motors at the required speed, the flap servo motors to the required positions, and the vacuum solenoids to acheive the temperature requirements above ambient selected by the driver for the vehicle.
Although the control module cannot be be repaired in service, a complete set of test pins are accessible for testing the system. Great care must be exercised when connecting the test equipment. The control module will be irreparably damaged should any of the test pins be momentary shorted together.

Key to Diagram
1 Control module
2 Differential temperature control
3 Temperature control
4 Blower motor switch
5 Ambient temperature sensor
6 In-car temperature control
7 Solar sensor
8 Coolant temperature switch
9 Flap feedback potentiometer
10 Flap feedback potentiometer
11 Blower motor feedback
12 Blower motor feedback
13 High speed relay
14 Blower motor
15 Blower motor
16 Flap servo motor
17 Flap servo motor
18 Defrost vacuum solenoid
19 Recirculation vacuum solenoid
20 Centre vent vacuum solenoid
21 Water valve vacuum solenoid



Temperature Distribution

The heating and ventilation unit case (Fig 1) consists of three parts, the rear of which in air conditioning systems would contain an evaporator. The front contains the heater matrix and is in two parts to enable the rotary flaps to be inserted. **Foot** outlet boxes are moulded in plastic and are removable for access.

Air into the unit either passes through the heater matrix, bypasses the matrix completely, or **a** combination of both to achieve the air temperature required above ambient.

The system employs **two** flaps that are driven to the required position (determined by the control system) by servo motors and gear-box assemblies.

The motors can rotate in either **a** clockwise or anti-clockwise direction depending on the direction of current flow through the motor.

The flap positions are monitored by feedback potentiometers located on the opposite side of the heater case to the servo motors, which supplies **a** voltage signal to the control module indicating the flap position.

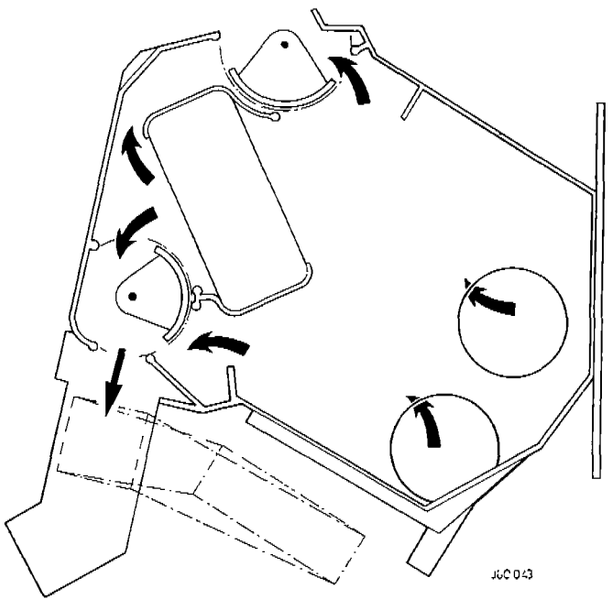


Fig 1

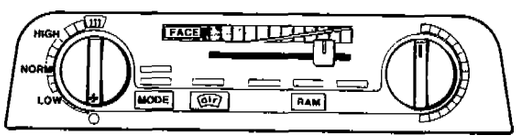


Fig 2

Control Panel

The switch control panel (Fig 2) contains a blower motor control rotary switch, auto/manual mode switch, air switch, ram switch, temperature differential selector and **a** in-car temperature selector. The control panel produces digital outputs which are supplied to and used by the electronic control module.

The airflow from the blower motors is controlled by the rotary switch located **on** the left hand side of the control panel. The switch has five positions:- OFF, LOW, MED, HIGH, and DEFROST.

In the **OFF** position the system is not operational. Power to the electronic control module **(E.C.M.)** and to the control potentiometers is removed, but a signal is Sent to the **E.C.M.** this is to ensure the flaps are closed preventing outside air from entering the system.

In the LOW, MED and HIGH positions, information regarding the range of fan speed selected is received **by** the control module from the control switch. Signals are also received by the **E.C.M** from the temperature selector, feedback circuits and the various sensors. The fan speed is then electronically controlled by the **E.C.M. So by** selecting LOW, MED or HIGH a level of speed in the range selected is received dependent on requirements. There are no distinct steps between the fan speeds, but a gradual increase or decrease of speed.

When **DEFROST** is selected the fans are electronically controlled to operate at maximum speed, the screen vents open, maximum heating is obtained and the lower flaps fully close (it can take up to a maximum period of 30 seconds to complete this function).

The temperature control located on the right hand side of the control panel is turned fully clockwise to obtain maximum heating.

When the mode button is set to auto the word **'AUTO' will** appear. **The** control system uses all the sensors to maintain the temperature selected. The system automatically adjust the flaps to achieve the disired results.
When the button is set in the manual mode the word 'MAN' will appear. The system overrides the sensors and gives the option of maintaining the selected temperature output air at or above ambient, regardless of ambient and in-car conditions.
The 'MODE' button will not function when 'RAM' isselected.
The air button (demist) when pressed will open the defrost flaps and increase the amount **of** air to the screen.
When the 'RAM' button is pressed, the word 'MAN' will appear above the mode button together with 'RAM' above the **'RAM'** button. The system autumatically goes into the 'MAN' mode.
Air **is** supplied by the foreward movement of the vehicle and the force **of** the air is dependent on the vehicle's speed.
The blower motors are disengaged except when 'DEFROST is selected.
Pressing the button again restores the system to the previous selected position on the **'MODE'** button.
The slide control (Air Differential Control) is used to alter the air temperature being distributed through the face level vents. To increase the air temperature being delivered through the vents, the slide control is moved to the right and to decrease the temperature the control **is** moved to the left.
Pressing the 'AIR' button increases the amount of air distributed to the windscreen and improves demisting. **It** is most effective under normal operation of the heater unit.
The centre vent is controlled automatically and only opens when the system is switched to full cooling to **supply** air at ambient temperature.
The vents at the end of the fascia supply ambient or heated air.

Temperature Sensors

There are two temperature sensors fitted into the system, the ambient and the in-car temperature sensors.
An input voltage is supplied to the sensors from AC4-13 of the control module. The temperature sensing signal from the sensor is transmitted into the control module via **AC4-4** and **AC2-4** respectively. The sensors are semi-conductor devices which are accurate over a wide temperature range. The semi-conductor **is** similar to **a** zenor diode in as much as it allows current to flow in reverse bias, but the current flow varies with temperature. The sensor assemblies have built in potentiometers which are preset and must not be adjusted.

Solar Sensor

A solar sensor (Fig 1) is fitted to reduce the temperature demand. This has the effect of stabilising the in-car temperature whilst reducing air outlet temperatures to compensate for increased solar load. This sensor is constructed round a photo transistor whose sensing voltage will vary with the ambient light level. An input is supplied to the sensor from **AC4-13** of the control module. The sensing voltage from the sensor is then fed back into the control module via **AC4-6.**

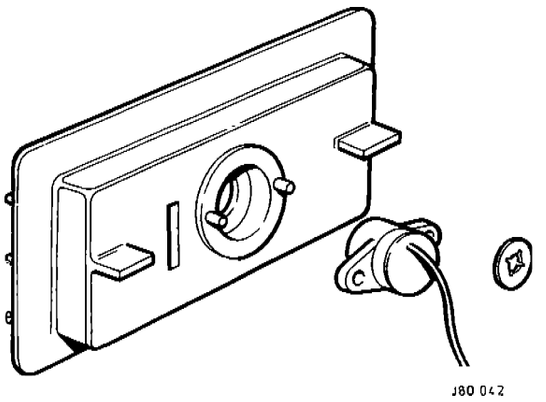


Fig 1

Coolant Temperature Switch

A coolant temperature switch (Fig 2) is fitted to the lower side of the heater matrix inlet pipe. Its contacts are open at temperatures below **40°C,** this will prevent the fans from operating when heat is required until relatively hot coolant is flowing through the system.

Blower Motor Speed Control

Mounted in the outlet of the blower motor units are heatsink assemblies each of which consists of an interferancesuppressor diode, a feedback isolation diode and a power transistor, The unit is supplied with battery power via an ignition switch controlled fuse and an isolation relay mounted within the blower motor assembly.

On all fan speed except high speed the negative circuit for the fan motor is via the power transistor and the control module. The feedback diode enables the control module to sense the voltage at the negative terminal of the fan motor and so calculate the speed of the blower motor. With the fan motor switched to high speed the high speed relay is energised closing the relay contacts giving the fan motor negative circuit a direct path to earth via the relay contacts, bypassing the transistor and the control module.

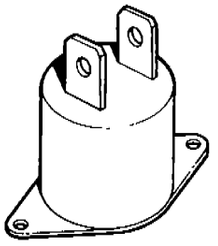


Fig 2

Vacuum System

The vacuum supply to four solenoids in the system is from the engine manifold via a reservior located under the battery and a non return valve.

The vacuum solenoids (Fig 3) are located on brackets beneath the heater assembly.

Components operated by the solenoids are:

1 Defrost/Demist flaps which are held **closed** by vacuum is identified by a green vacuum supply tube.
2 Recirculation/Fresh air flaps which are held closed by vacuum is identified **by** a blue vacuum supply tube.
3 Centre vent, which is opened by vacuum is identified **by** a black vacuum supply tube.
4 Coolant valve which is closed by vacuum and is identified **by** a red vacuum supply tube.

The vacuum supply to the centre vent and recirculation/ fresh air flaps have built restrictors so that the operation of these flaps are slowed down to avoid the risk of the system hunting. The recirculationflaps can take upto 30 seconds to change state.

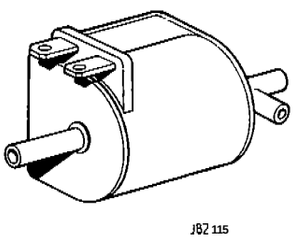


Fig **3**

HEATER SWITCH CONTROL MODULE

RENEW **86.80.14**

Disconnect the battery earth lead.
Remove the gear lever knob.
Remove the console finisher.
Remove the screws securing the upper console assembly and displace the console assembly for access.
Slacken the screws securing the control module (Fig 1).
Disconnect the cable harness block connector.
Remove the control module.

Fitting a new control module is the reversal of the removal procedure.

0209G

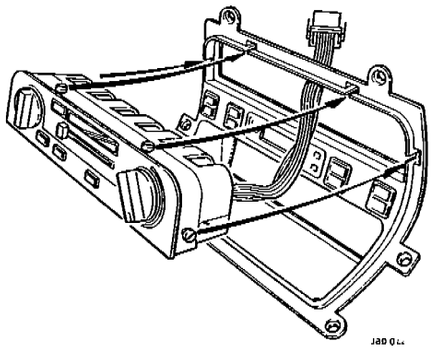


Fig 1

ELECTRONIC CONTROL MODULE (ECM)

RENEW **80.10.52**

Disconnect the battery earth lead.
Remove the passenger dash liner.
Remove the screws securing the control module (Fig 2).
Displace the module from its location.
Disconnect the earth lead.
Note and disconnect the multi-plug connectors.
Remove the control module.

Fitting a new control module is the reversal of the removal procedure ensuring the multi-plugs are secure and tight.

0209G

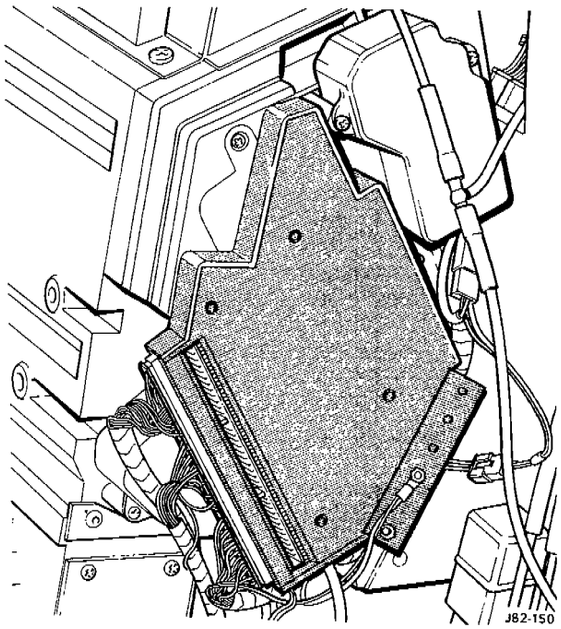


Fig 2

HEATER MATRIX

RENEW **80.20.29**

Disconnect the battery earth lead.
Drain the coolant.
Remove the driver and passenger side dash liners.
Remove the glove box lid and glove box.
Remove the matrix pipe gaskets.
Remove the screws securing the electronic control module and displace the module for access (Fig 2).
Remove the screws securing the matrix housing and remove the housing halves.
Remove the matrix (Fig 3).
Remove the foam strip from the matrix.

Fitting a new matrix is the reversal of the removal procedure

0209G

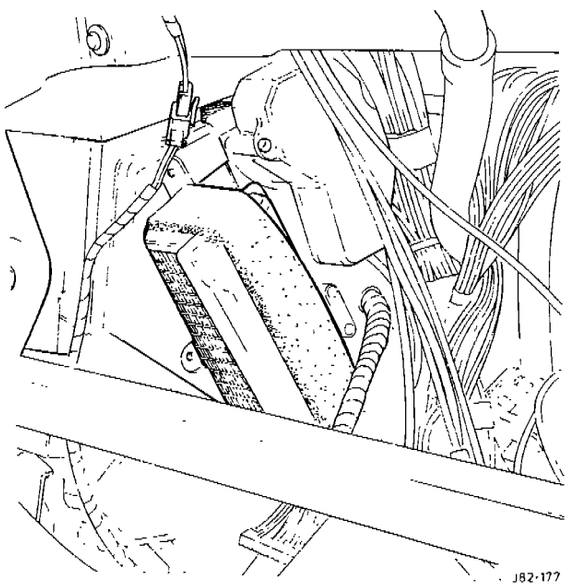


Fig 3

HEATER MATRIX PIPE GASKET

RENEW **80.20.04**

Disconnect the battery earth lead.
Drain the coolant.
Remove the passenger dash liner.
Remove the glove box lid and glove box.
Disconnect the coolant temperature switch supply cables (1 Fig 1).
Remove the screws securing the heater matrix pipe housing (2 Fig 1).
Remove the housing halves.
Displace the foam pad.
Remove the screws securing the pipes.
Displace the pipes for access (3 Fig 1).
Remove the gaskets.
Clean the surface of the matrix.
Fitting new gaskets is the reversal of the removal procedure.

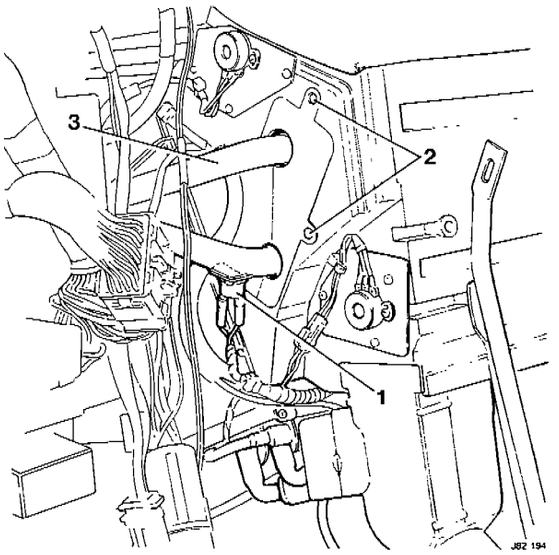


Fig 1

HEATER COOLANT VALVE

RENEW **80.10.16**

Drain the coolant.
Slacken the coolant hose to valve securing clip and disconnect the hose (3 Fig 2).
Slacken the valve to heater feed pipe hose clip (2 Fig 2).
Disconnect the vacuum hose elbow (1 Fig 2).
Remove the valve assembly (4 Fig 2).
Slacken the hose clip and remove the hose.
Fitting a new coolant valve is the reversal of the removal procedure.

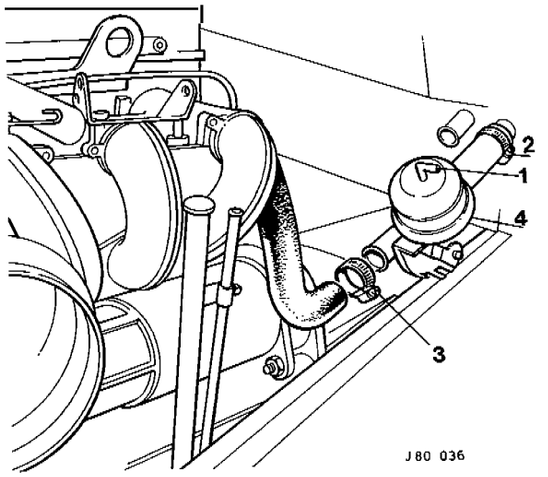


Fig 2

BLOWER MOTOR ASSEMBLY (DRIVER SIDE)

RENEW **80.20.11**

Disconnect the battery earth lead.
Remove the drivers dash liner.
Remove the clip retaining the pliable trunking to the heater unit.
Displace the pliable trunking from the heater unit.
Remove the bolts securing the motor assembly.
Disconnect the cable harness multi-plug.
Cut and remove rachet strap securing the brake switch cable harness.
Disconnect the vacuum pipe from the servo.
Remove the blower assembly (Fig 3).
Remove the gasket and trunking from the blower motor assembly.
Secure the trunking and new gasket to the new blower motor assembly.
Smear the gasket with glue and fit the assembly in position.
Fit but do not tighten the securing bolts.
Connect the vacuum hose to the servo.
Connect the cable harness multi-plug connectors.
Connect and secure with retaining clip the trunking to the heater unit.
Tighten the blower motor securing bolts.
Refit the dash liner.

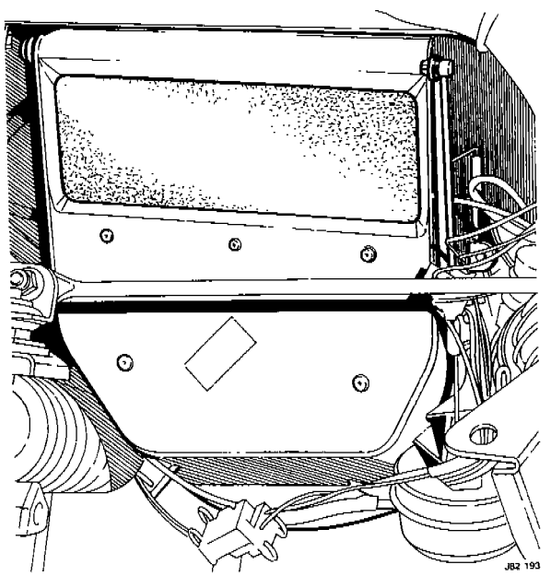


Fig 3

0209G

BLOWER MOTOR ASSEMBLY (PASSENGER SIDE)

RENEW **80.20.12**

Disconnectthe battery earth lead.
Removethe passenger dash liner.
Removethe glove box lid and glove box.
Remove the lower screws securing the central processor.
Displacethe earth lead and remove the spacers.
Slacken the upper screws securing the processor.
Raise the processor to disengage from the upper screws and place downwards.
Remove the screws and bolts securing the processor mounting bracket.
Removethe bracket.
Removethe bolts securing the blower motor assembly.
Disconnectthe cable harness multi-plug connector.
Disconnect the in-car sensor hose from the pliable trunking.
Disconnectthe vacuum pipe from the servo.
Remove the clip retaining the pliable trunking to the heater unit.
Displace the pliable trunking from the heater unit.
Removethe blower assembly (Fig 1).
Remove the gasket and trunking from the blower motor assembly.

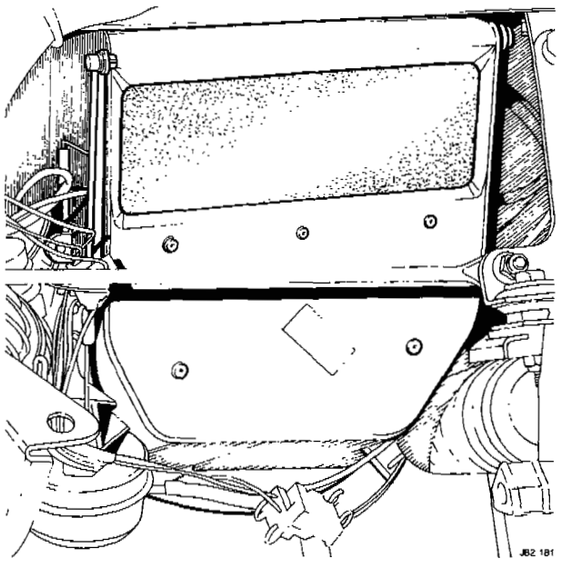


Fig 1

Secure the trunking and new gasket to the new blower motor assembly.
Smear the gasket with glue and fit the assembly in position.
Fit but do not tighten the securing bolts.
Connectthe vacuum hose to the servo.
Connectthe cable harness multi-plug connectors.
Connectthe in-car sensor to the trunking.
Connect and **secure** with retaining clip the trunking to the heater unit.
Tighten the blower motor securing bolts.
Fit the central processor in the reverse order of the removal procedure.
Fitthe dash liner.

0209G

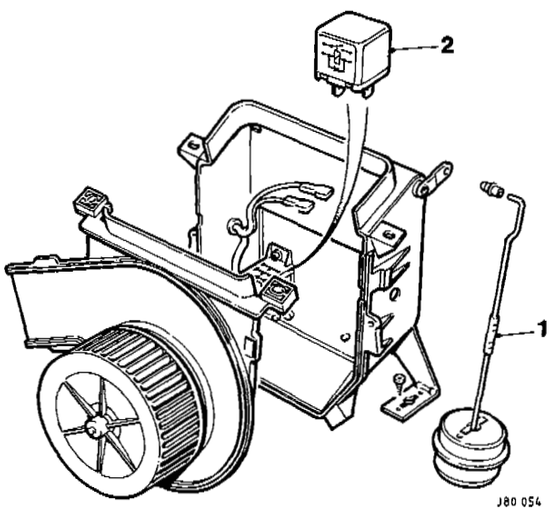


Fig 2

BLOWER MOTOR ISOLATION RELAY (DRIVER SIDE)

RENEW **80.10.42**

Disconnectthe battery earth lead.
Removethe drivers side dash liner.
Remove the blower motor assembly 80.20.11 page 09.
With the blower motor assembly on a work bench disconnect the vacuum servo to flap link arm (1 Fig 2).
Open the flap.
Displace the cable harness for access.
Remove the relay (2 Fig 2).

Fitting a new relay is the reversal of the removal procedure.

0209G

BLOWER MOTOR ISOLATION RELAY (Passenger Side)

RENEW **80.10.41**

Disconnect the battery earth lead.
Remove the passenger dash liner.
Remove the glove box lid and glove box.
Remove the blower motor assembly 80.20.12 page 10.
With the blower motor assembly on a work bench disconnect the vacuum servo to flap link arm (1 Fig 1).
Open the flap.
Displace the cable harness for access.
Remove the relay (2 Fig 1).

Fitting a new relay is the reversal of the removal procedure.

0209G

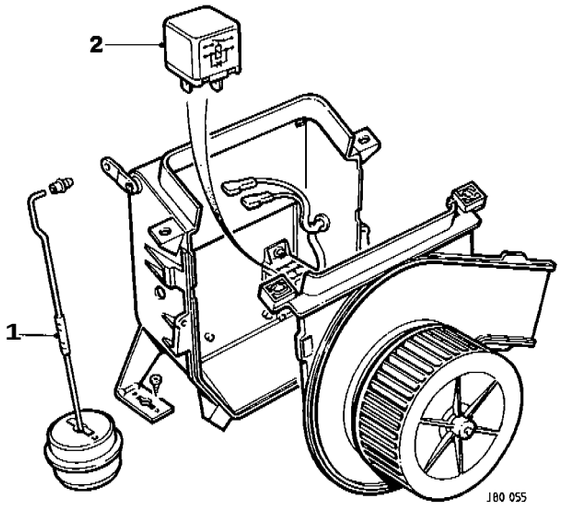


Fig 1

BLOWER MOTOR HIGH SPEED RELAY

RENEW **80.10.39**

Disconnect the battery earth lead.
Remove the relevant dash liner.
Disconnect the servo to blower flap link arm (1 Fig 2).
Open the flap.
Displace and remove the relay (2 Fig 2).

Fitting a new relay is the reversal of the removal procedure.

0209G

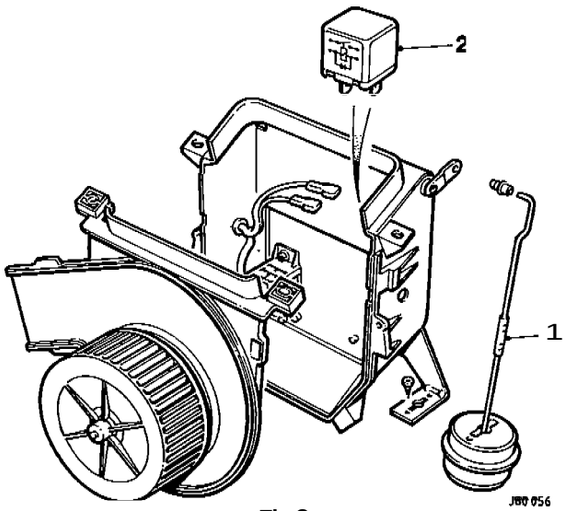


Fig 2

UPPER FLAP SERVO MOTOR & GEARBOX

RENEW **80.10.45**

Disconnect the battery earth lead.
Remove the driver side dash liner.
Remove the screws securing the electronic control module (1 Fig 3).
Displace the module for access.
Remove the screws securing the motor assembly (2 Fig 3).
Displace the assembly for access.
Disconnect the cable harness multi-plug connector.
Remove the motor assembly.

Fitting a new motor assembly is the reversal of the removal procedure.

0209G

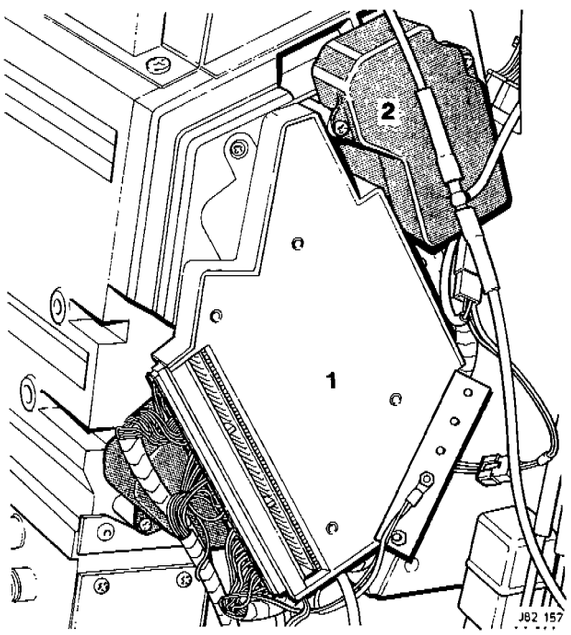


Fig 3

UPPER SERVO MOTOR FEEDBACK POTENTIOMETER

RENEW **80.10.44**

Disconnect the battery earth lead.
Remove the passenger dash liner.
Remove the screws (Fig 1) securing the potentiometer mounting plate.
Displace the potentiometer from the flap drive shaft.
Disconnect the multi-plug connector.
Remove the potiometer assembly.

Fitting a new potentiometer is the reversal of the removal procedure.

0209G

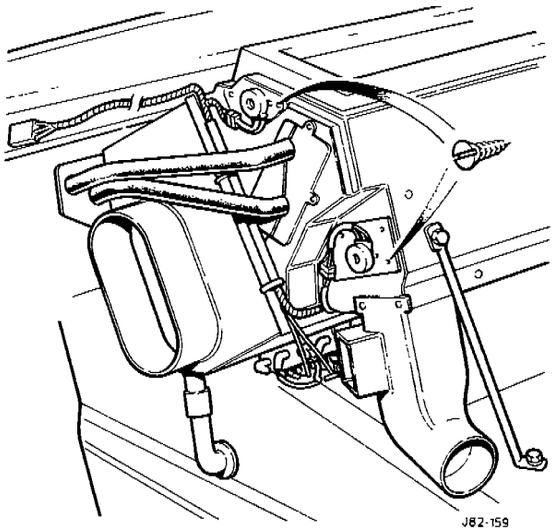


Fig 1

LOWER FLAP SERVO MOTOR & GEARBOX

RENEW **80.10.46**

Disconnect the battery earth lead.
Remove the drivers dash liner.
Remove the screws securing the electronic control module (1 Fig 2).
Displace the module for access.
Remove the screws securing the motor assembly.
Displace the assembly for access.
Disconnect the cable harness multi-plug connector.
Remove the motor assembly (2 Fig 2).

Fitting a new motor assembly is the reversal of the removal procedure.

0209G

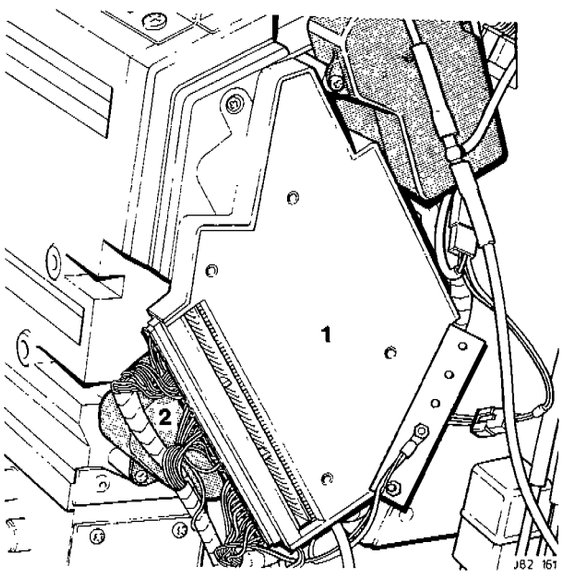


Fig 2

LOWER SERVO MOTOR FEEDBACK POTENTIOMETER

RENEW **80.10.43**

Disconnect the battery earth lead.
Remove the passenger dash liner.
Remove the screws securing the potentiometer mounting plate (Fig 1).
Displace the potentiometer from the flap drive shaft.
Disconnect the multi-plug connector.
Remove the potiometer assembly.

Fitting a new potentiometer is the reversal of the removal procedure.

0209G

CENTRE FASCIA VENTILATOR FLAP SERVO

RENEW **80.15.51**

Disconnect the battery earth lead.
Remove the driver and passenger side dash liners.
Remove the driver and passenger side closing panels.
Remove the steering wheel.
Remove the glove box lid and glove box.
Remove the fascia centre panel.
Remove the fascia centre vent outlet.
Remove the fascia board and centre vent.
Remove the screws securing the servo.
Remove the nut/bolt securing the servo to vent.
Disconnect the vacuum pipe from the servo.
Remove the spire clips.
Remove the servo (Fig 1).

Fitting a new ventilator flap servo is the reversal of the removal procedure

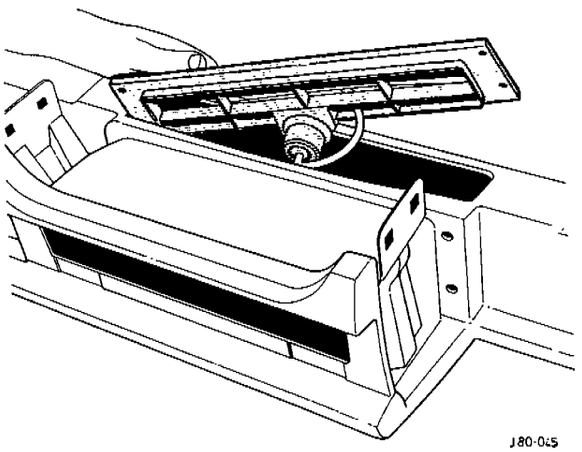


Fig 1

0209G

DEMISTER FLAP SERVO

RENEW **80.15.52**

Disconnect the battery earth lead.
Remove the driver and passenger side dash liners.
Remove the driver and passenger side closing panels.
Remove the steering wheel.
Remove the glove box lid and glove box.
Remove the fascia centre panel.
Remove the fascia centre vent outlet.
Remove the fascia board and demister outlet duct.
Remove the screws securing the demist vent.
Invert the fascia for access.
Disconnect the vacuum pipe from the servo.
Remove the spire clips.
Remove the servo (Fig 2).

Fitting a new demister flap servo is the reversal of the removal procedure

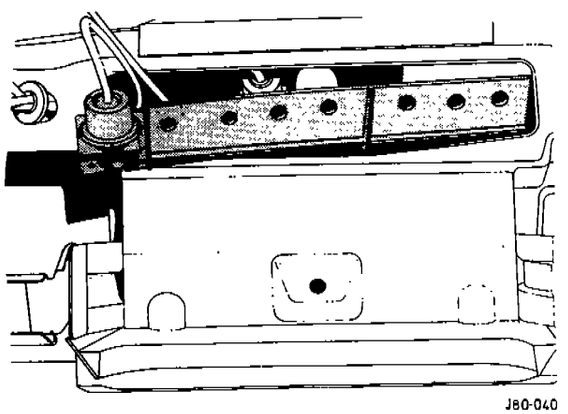


Fig 2

0209G

CENTRE VENT VACUUM SOLENOID

RENEW **80.10.47**

Disconnect the battery earth lead.
Remove the drivers dash liner.
Remove the footwell outlet duct.
Displace the cable harness.
Remove the bolts securing the vacuum solenoid mounting plate.
Displace the solenoid (Fig 1).
Note and disconnect the vacuum hoses.
Note and disconnect the supply cables.
remove the solenoid.

Fitting a new vacuum solenoid is the reversal of the removal procedure.

0209G

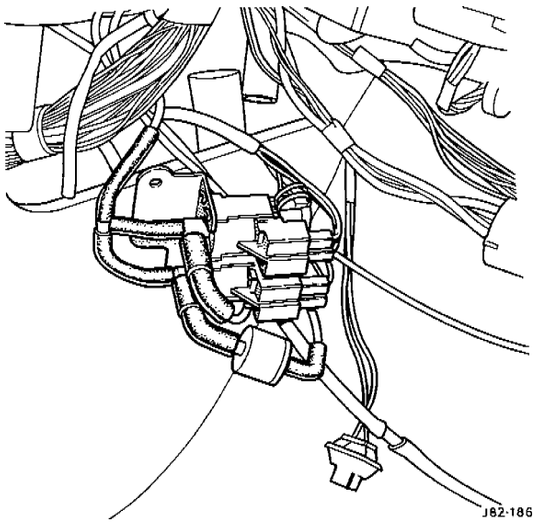


Fig 1

RE-CIRCULATION VACUUM SOLENOID

RENEW **80.10.48**

Disconnect the battery earth lead.
Remove the driver and passenger side dash liners.
Remove the console finisher.
Remove the console ashtray.
Remove the fascia panel and radio console.
Remove the console assembly.
Release the clips retaining the left hand air distribution box and remove the box.
Displace the solenoid from its mounting bracket (Fig 2).
Note and disconnect the vacuum hoses.
Note and disconnect the supply cables
Remove the solenoid

Fitting a new vacuum solenoid is the reversal of the removal procedure.

0209G

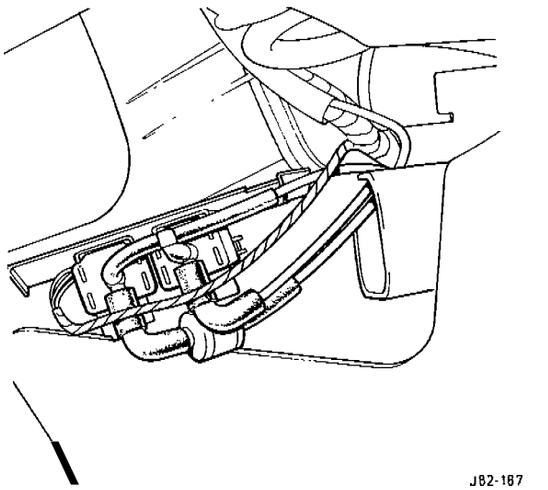


Fig 2

DE-FROST VACUUM SOLENOID

RENEW **80.10.49**

Disconnect the battery earth lead.
Remove the drivers dash liner.
Remove the footwell outlet duct.
Displace the cable harness.
Remove the **bolts** securing the vacuum solenoid mounting plate.
Displace the solenoid.
Note and disconnect the vacuum hoses.
Note and disconnect the supply cables.
Remove the solenoid (Fig 3**).**

Fitting a new vacuum solenoid is the reversal of the removal procedure.

0209G

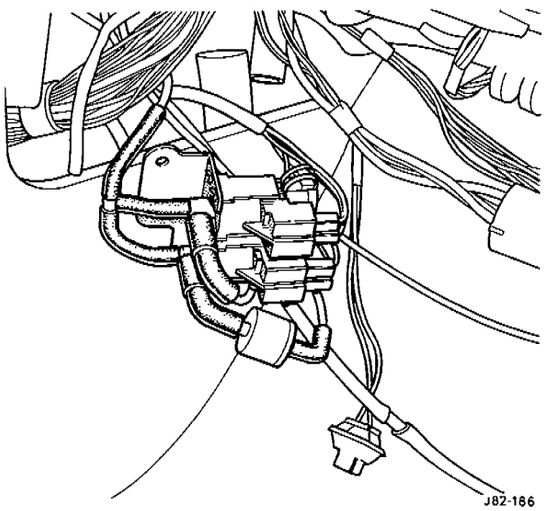


Fig 3

COOLANT VALVE VACUUM SOLENOID

RENEW **80.10.50**

Disconnect the battery earth lead.
Remove the driver and passenger side dash liners.
Remove the console finisher.
Remove the console ashtray.
Remove the fascia panel.
Remove the radio console.
Remove the console assembly.
Release the clips retaining the **left** hand air distribution box and remove the box.
Displace the solenoid from its mounting bracket (Fig 1).
Note and disconnect the vacuum hoses.
Note and disconnect the supply cables.
Remove the solenoid.

Fitting a new vacuum solenoid is the reversal of the removal procedure.

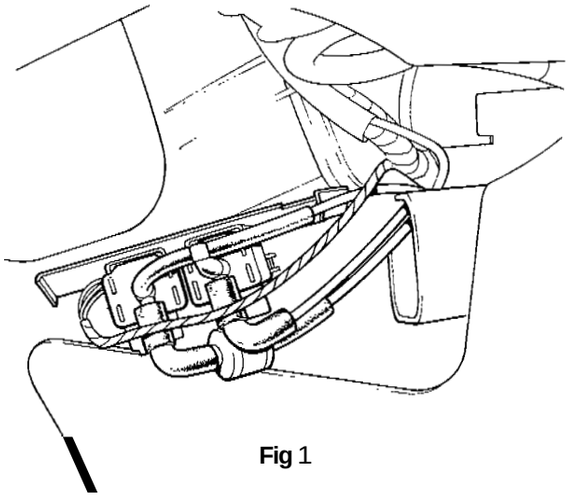


Fig 1

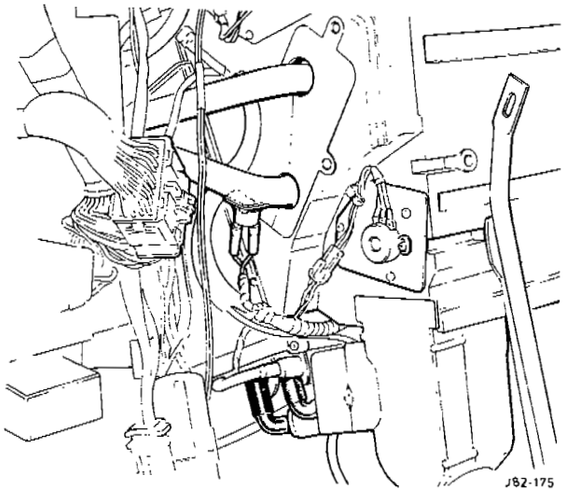
J82·187

0209G

COOLANT TEMPERATURE SWITCH

RENEW **80.10.51**

Open the bonnet and disconnect the battery earth lead.
Remove the passenger dash liner.
Disconnect the switch supply cables (Fig 2).
Remove the screws securing the switch **to** pipe bracket.
Remove the switch.
Fitting a new switch is the reversal **of** the removal procedure.



J82-175

Fig 2

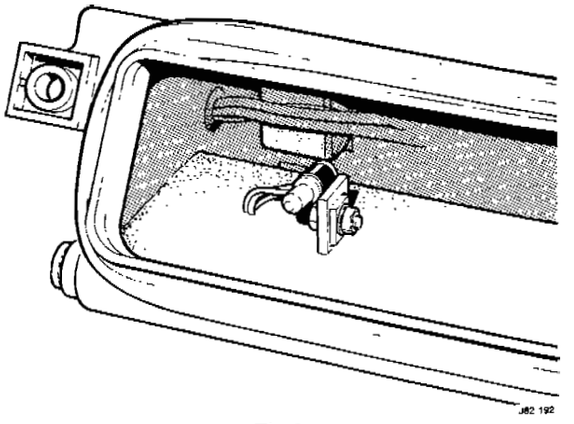
0209G

AMBIENT TEMPERATURE SENSOR

RENEW **80.10.53**

Open the bonnet and disconnect the **battery** earth lead.
Remove the right side dash liner.
NOTE: On LHD vehicles remove the glove box lid and **g**love box.
Remove the right hand blower motor assembly 80.20.11
Remove the screws securing the ambient temperature sensor.
Disconnect the cable harness multi-plug connector.
Slacken the nut/bolt securing the sensor probe retaining clip to flap.
Displace the sensor probe from the retaining clip and remove the sensor (Fig 3).

Fitting a new sensor is the reversal **of** the removal procedure.



J82 192

Fig 3

0209G

IN-CAR TEMPERATURE SENSOR

RENEW **80.10.54**

Open the bonnet and disconnect the battery earth lead.
Remove the passenger dash liner.
Remove the glove box lid and glove box.
Remove the screws securing the sensor (3 Fig 1).
Disconnect the cable harness multi-plug connector (1 Fig 1).
Remove the sensor from the hose (2 Fig 1).

Fitting a new sensor is the reversal of the removal procedure.

0209G

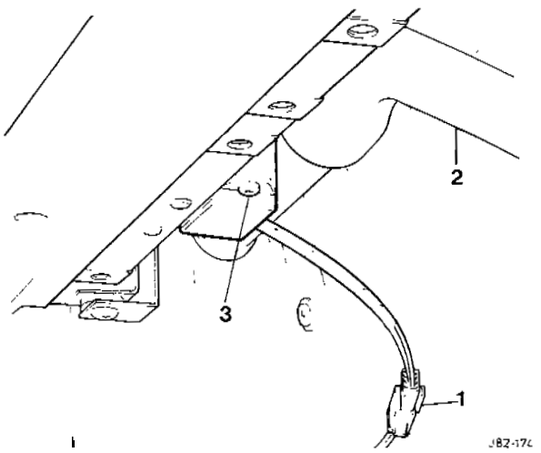


Fig 1

SOLAR SENSOR

RENEW **80.10.55**

Open the car door and carefully prise the solar sensor mounting panel from the fascia (1 Fig 2).
Disconnect the sensor multi-plug connector.
Remove the complete solar assembly.
Remove the spire clips (3 Fig 2) securing the sensor to the mounting panel (2 Fig 2).
Remove the sensor.

Fitting a new sensor is the reversal of the removal procedure.

0209G

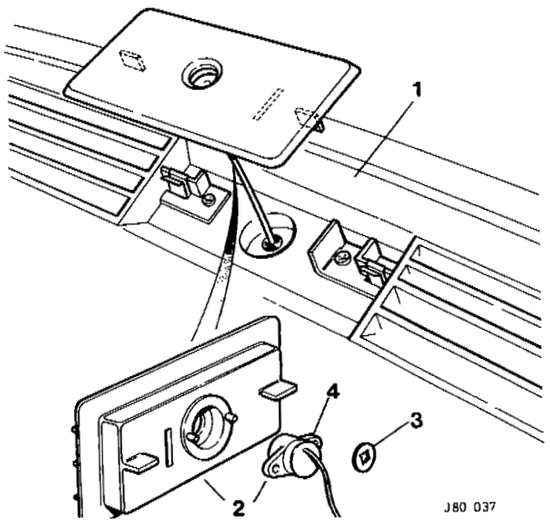


Fig 2

DEMISTER DUCT

RENEW **80.15.02**

Open the bonnet and disconnect the battery earth lead.
Remove both dash liners.
Remove both closing panels.
Remove the fascia veneer centre panel and centre vent outlet.
Remove the steering wheel.
Remove both demister duct outlets (1 Fig 3).
Remove the fascia board.
Remove the screws securing the demister duct (2 Fig 3).
Invert the fascia.
Disconnect the vacuum pipe.
Remove the demister duct (3 Fig 3).

Fitting a new demister duct is the reversal of the removal procedure.

0209G

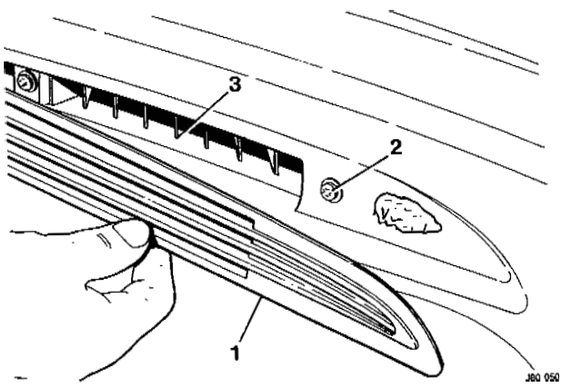


Fig 3

CENTRE VENTILATOR

RENEW **80.15.24**

Open the bonnet and disconnect the battery earth lead.
Remove both dash liners.
Remove both closing panels.
Remove the fascia veneer centre panel and centre vent outlet.
Remove the steering wheel.
Remove both demister duct outlets.
Remove the fascia board.
Remove the screws securing the glove box lid and remove the lid.
Remove the screws securing glove box striker and remove the striker and spacer.
Remove the inner and outer securing screws.
Remove the glove box assembly from the fascia.
Remove the screws securing the centre vent.
Reposition the fascia and displace the vent assembly.
Note and disconnect the vacuum pipes.
Manouvre the vent assembly from the fascia (Fig 1).

Fitting a new centre ventilator is the reversal of the removal procedure.

0209G

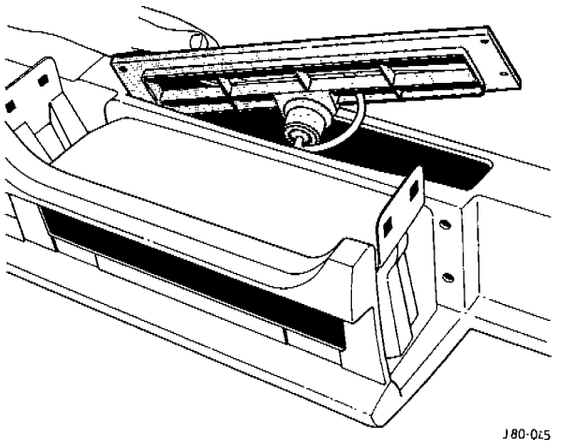


Fig 1

CENTRE FASCIA VENTILATOR OUTLET

RENEW **80.15.48**

Open the car door and remove the fascia centre veneer pane.
Displace and remove the ventilator outlet (Fig 2).

Fitting a new centre ventilator outlet is the reversal of the removal procedure.

0209G

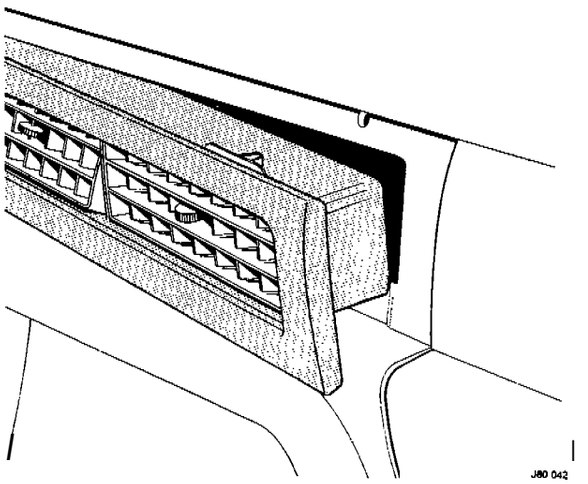


Fig 2

DRIVER SIDE VENTILATOR OUTLET

RENEW **80.15.49**

Open the car door and remove the ventilator outlet direction vent.
Release the outlet retaining clips.
Remove the vent outlet (Fig 3).

Fitting a new ventilation outlet is the reversal of the removal procedure

0209G

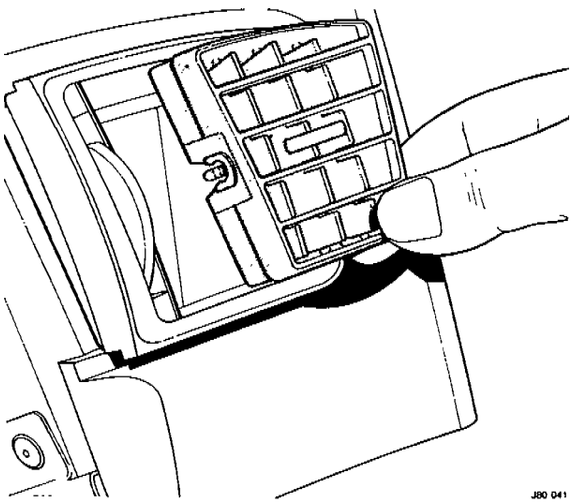


Fig 3

PASSENGER SIDE VENTILATOR OUTLET

RENEW **80.15.50**

Open the car door. Open the glove box lid.
Remove the ventilator outlet direction vent.
Release the outlet retaining clips.
Remove the vent outlet. (Fig 1).

Fitting a new ventilation outlet is the reversal of the removal procedure

0209G

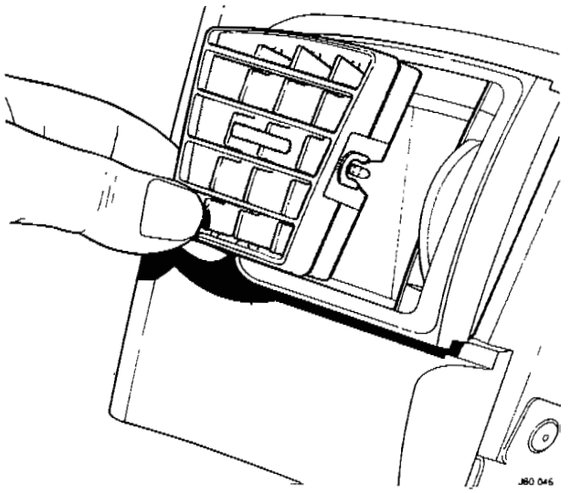


Fig 4

DEMISTER DUCTOUTLET

RENEW **80.15.53**

Open the car door.
Carefully prise the solar sensor housing from its position.
Remove the screws securing the vent outlet (1 Fig 2).
Remove the vent from the retaining clip (2 Fig 2).

Fitting a new demister duct outlet is the reversal of the removal procedure

0209G

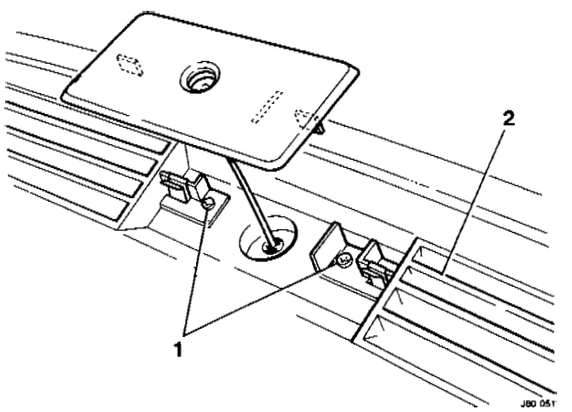


Fig 2

BOOT VENTILATOR OUTLET

RENEW **80.15.66**

Open the boot.
Remove the rear quarter bumper.
Remove the nuts securing the rear lamp interior finisher and remove the finisher (1 Fig 3).
Remove the screw securing the side liner.
Carefully displace the side liner for access to the ventilator outlet.
Displace the ABS control unit from the outlet (2 Fig 3).
Cut and remove the ratchet straps securing the cable harness.
Remove the bolts securing the outlet (4 Fig 3).
Remove the outlet assembly (5 Fig 3).

Fitting a new boot ventilator outlet is the reversal of the removal procedure.

0209G

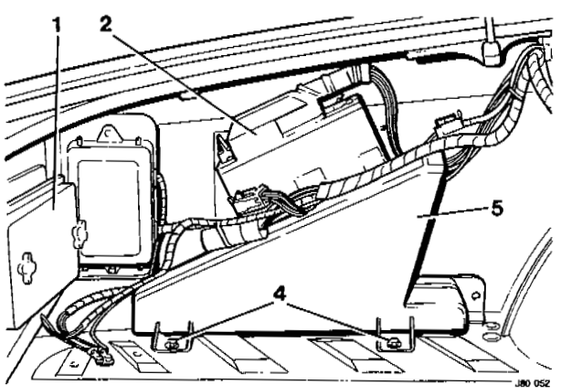


Fig 3

CONTENTS

DESCRIPTION	OPERATION	OPERATION No	PAGE No
AIR CONDITIONING SYSTEM	ADD REFRIGERANT	82.30.02	82-18
AIR CONDITIONING SYSTEM	CHARGING	82.30.08	82-30
AIR CONDITIONING SYSTEM	DEPRESSURIZE	82.30.05	82-27
AIR CONDITIONING SYSTEM	EVACUATE	82.30.06	82-28
AIR CONDITIONING SYSTEM	FUNCTIONAL TEST	82.00.00	82-63
AIR CONDITIONING SYSTEM	FLUSHING	82.30.03	82-27
AIR CONDITIONING SYSTEM	FULL CHARGE	82.00.00	82-31
AIR CONDITIONING SYSTEM	GOOD PRACTICE	82.00.00	82-15
AIR CONDITIONING SYSTEM	LEAK TEST	82.30.09	82-18
AIR CONDITIONING SYSTEM	PURGE	82.30.04	82-17
AIR CONDITIONING SYSTEM	STABILIZING	82.30.00	82-17
AMBIENT TEMPERATURE SENSOR	RENEW	82.20.02	82-38
BLOWER MOTOR (LEFT HAND)	RENEW	82.25.13	82-39
BLOWER MOTOR (RIGHT HAND)	RENEW	82.25.14	82-38
BLOWER MOTOR SPEED CONTROL	DESCRIPTION	82.00.00	82-08
CENTRE VENT VACUUM SOLENOID	RENEW	82.20.66	82-52
CHARGE VALVE CORE	RENEW	82.30.12	82-53
COMPRESSOR	DESCRIPTION	82.00.00	82-10
COMPRESSOR	RENEW	82.10.20	82-32
COMPRESSOR CLUTCH	RENEW	82.10.08	82-55
COMPRESSOR CLUTCH CONTROL	DESCRIPTION	82.00.00	82-08
COMPRESSOR DRIVE BELT	ADJUST	82.10.01	82-33
COMPRESSOR DRIVE BELT	RENEW	82.10.02	82-33
COMPRESSOR OIL	CHECK	82.00.00	82-54
COMPRESSOR SHAFT SEAL	RENEW	82.10.11	82-59
CONDENSOR	DESCRIPTION	82.00.00	82-11
CONDENSOR	RENEW	82.15.07	82-35
COOLANT TEMPERATURE SWITCH	DESCRIPTION	82.00.00	82-07
DEFROST DEMIST VACUUM SOLENOID	RENEW	82.20.68	82-51
DEMISTER FLAP SERVO	RENEW	82.20.42	82-42
DRIER BOTTLE	DESCRIPTION	82.00.00	82-11
DRIER BOTTLE	RENEW	82.17.01	82-36
ELECTRONIC CONTROL MODULE	RENEW	82.20.65	82-44
ELECTRONIC CONTROL SYSTEM	DESCRIPTION	82.20.00	82-04
EVAPORATOR	DESCRIPTION	82.00.00	82-12
EVAPORATOR TEMPERATURE SENSOR	RENEW	82.20.64	82-53
EXPANSION VALVE	DESCRIPTION	82.00.00	82-13
EXPANSION VALVE	RENEW	82.25.01	82-46
FLAPMOTOR/GEARBOX (LOWER)	RENEW	82.20.63	82-43
FLAPMOTOR/GEARBOX (UPPER)	RENEW	82.20.62	82-43
HEATER MATRIX	RENEW	82.25.19	82-49
HEATER/COOLER UNIT	RENEW	82.25.21	82-50
HOSE	TORQUE FIGURES	82.00.00	82-26
HOSE COMPRESSOR TO CONDENSER	RENEW	82.25.49	82-48
HOSE EVAPORATOR TO COMPRESSOR	RENEW	82.25.02	82-47
HOSE RECIEVER/DRIER TO EVAPORATOR	RENEW	82.25.03	82-48
INDEX	ILLUSTRATED	82.00.00	82-02
INDEX	KEY	82.00.00	82-03
IN-CAR TEMPERATURE SENSOR	RENEW	82.20.03	82-37
LOWER FEED BACK POTENTIOMETER	RENEW	82.20.60	82-36
MANIFOLD GUAGE SET	DESCRIPTION	82.00.00	82-16
PRESSURE/TEMPERATURE	COMPARISON CHART	82.00.00	82-19
REAR AIR DISTRIBUTION BOX	RENEW	82.20.34	82-35
RECIRCULATION/FRESH AIR VACUUM SOLENOID	RENEW	82.25.47	82-52
REFRIGERATION CYCLE	DESCRIPTION	82.00.00	82-13
SANDEN COMPRESSOR 709	CONTENTS	82.00.00	82-65
SIGHT GLASS	DESCRIPTION	82.00.00	82-12
SOLAR SENSOR	DESCRIPTION	82.00.00	82-07
SOLAR SENSOR	RENEW	82.20.70	82-40
SUPER HEAT SWITCH	RENEW	82.10.12	82-34
SUPER HEAT SWITCH	TEST	82.10.13	82-33
SUPER HEAT SWITCH AND THERMAL FUSE	DESCRIPTION	82.00.00	82-08
SWITCH CONTROL MODULE	RENEW	86.80.15	82-45
SWITCH CONTROL MODULE ILLUMINATION	RENEW	86.46.07	82-45
SWITCH CONTROL PANEL	DESCRIPTION	86.00.00	82-06
TEMPERATURE DISTRIBUTION SYSTEM	DESCRIPTION	82.00.00	82-05
TEMPERATURE SENSORS	DESCRIPTION	82.00.00	82-07
UPPER FEED BACK POTENTIOMETER	RENEW	82.20.61	82-37
VACUUM SYSTEM	DESCRIPTION	82.00.00	82-09
VENTILATOR CENTRE FLAP SERVO	RENEW	82.20.41	82-41
VENTILATOR OUTLETS	RENEW	82.20.39	82-41
WATER TEMPERATURE SWITCH	RENEW	82.20.71	82-44
WATER VALVE	RENEW	82.20.33	82-40
WATER VALVE VACUUM SOLENOID	RENEW	82.20.69	82-52

0057K

ILLUSTRATED INDEX

RESERVED FOR ILLUSTRATEDINDEX

ILLUSTRATED INDEX– KEY

ITEM No	DESCRIPTION	OPERATION No	PAGE No	VOLUME
1	AIR CONDITIONING SYSTEM	82.30.02	82-18	4
1	AIR CONDITIONING SYSTEM	82.30.08	82-30	4
1	AIR CONDITIONING SYSTEM	82.30.05	82-27	4
1	AIR CONDITIONING SYSTEM	82.30.06	82-28	4
–	AIR CONDITIONING SYSTEM	82.00.00	82-63	4
1	AIR CONDITIONING SYSTEM	82.30.03	82-27	4
–	AIR CONDITIONING SYSTEM	82.00.00	82-31	4
–	AIR CONDITIONING SYSTEM	82.00.00	82-15	4
1	AIR CONDITIONING SYSTEM	82.30.09	82-18	4
1	AIR CONDITIONING SYSTEM	82.30.04	82-17	4
1	AIR CONDITIONING SYSTEM	82.30.00	82-17	4
2	AMBIENT TEMPERATURE SENSOR	82.20.02	82-38	4
3	BLOWER MOTOR (LEFT HAND)	82.25.13	82-39	**4**
4	BLOWER MOTOR (RIGHT HAND)	82.25.14	82-38	4
–	BLOWER MOTOR SPEED CONTROL	82.00.00	82-08	**4**
5	CENTRE VENT VACUUM SOLENOID	82.25.46	82-52	4
6	CHARGE VALVE CORE	82.30.12	82-53	4
–	COMPRESSOR	82.00.00	82-10	4
7	COMPRESSOR	82.10.20	82-32	4
–	COMPRESSOR CLUTCH	82.00.00	82-55	4
–	COMPRESSOR CLUTCH CONTROL	82.00.00	82-08	4
8	COMPRESSOR DRIVE BELT	82.10.01	82-33	**4**
8	COMPRESSOR DRIVE BELT	82.10.02	82-33	4
–	COMPRESSOR OIL	82.00.00	82-54	4
–	COMPRESSOR SHAFT SEAL	82.00.00	82-59	4
–	CONDENSER	82.00.00	82-11	4
9	CONDENSER	82.10.20	82-35	4
–	COOLANT TEMPERATURE SWITCH	82.00.00	82-07	4
10	DEFROST/DEMIST VACUUM SOLENOID	82.25.45	82-51	4
11	DEMISTER FLAP SERVO	82.20.42	82-42	4
–	DRIER BOTTLE	82.00.00	82-11	4
12	DRIER BOTTLE	82.17.01	82-36	4
13	ELECTRONIC CONTROL MODULE	82.20.65	82-44	4
–	ELECTRONIC CONTROL SYSTEM	82.20.00	82-04	4
–	EVAPORATOR	82.00.00	82-12	4
14	EVAPORATOR TEMPERATURE SENSOR	82.20.64	82-53	**4**
–	EXPANSION VALVE	82.00.00	82-13	4
15	EXPANSION VALVE	82.25.01	82-46	4
16	FLAP MOTOR/GEARBOX (LOWER)	82.20.63	82-43	**4**
17	FLAP MOTOR/GEARBOX (UPPER)	82.20.62	82-43	4
18	EHATER MATRIX	82.25.19	82-49	4
19	HEATER/COOLER UNIT	82.25.21	82-50	4
–	HOSE	82.00.00	82-26	4
20	HOSE. COMPRESSOR TO CONDENSER	82.25.49	82-48	4
21	HOSE. EVAPORATOR TO COMPRESSOR	82.25.02	82-47	**4**
22	HOSE) RECEIVER/DRIER TO EVAPORATOR	82.25.03	82-48	4
–	INDEX–ILLUSTRATED	82.00.00	82-02	4
–	INDEX– KEY	82.00.00	82-03	4
23	IN-CAR TEMPERATURE SENSOR	82.20.03	82-37	4
24	LOWER FEED BACK POTENTIOMETER	82.20.60	82-36	**4**
25	UPPER FEED BACK POTENTIOMETER	82.20.61	82-37	4
–	MANIFOLD GAUGE SET	82.00.00	82-16	4
–	PRESSURE/TEMPERATURE	82.00.00	82-19	4
26	REAR AIR DISTRIBUTION BOX	82.20.34	82-35	4
–	REFRIGERATION CYCLE	82.00.00	82-13	4
–	SIGHT GLASS	82.00.00	82-12	4
–	SOLAR SENSOR	82.00.00	82-07,	**4**
27	SOLAR SENSOR	82.20.20	82-40	4
28	SUPER HEAT SWITCH	82.10.12	82-34	4
28	SUPER HEAT SWITCH	82.10.13	82-33	4
–	SUPER HEAT SWITCH AND THERMAL FUSE	82.00.00	82-08	4
29	SWITCH CONTROL MODULE	82.20.72	82-45	4
30	SWITCH CONTROL MODULE ILLUMINATION	86.46.07	82-45	4
–	SWITCH CONTROL PANEL	82.00.00	82-06	4
–	TEMPERATURE DISTRIBUTION SYSTEM	82.00.00	82-05	4
–	TEMPERATURE SENSORS	82.00.00	82-07	4
–	VACUUM SYSTEM	82.00.00	82-09	4
31	VENTILATOR CENTRE FLAP SERVO	82.20.41	82-41	4
32	VENTILATOR OUTLETS	82.20.39	82-41	4
33	WATER TEMPERATURE SWITCH	82.20.71	82-44	4
34	WATER VALVE	82.20.33	82-40	4
35	WATER VALVE VACUUM SOLENOID	82.25.48	82-52	4

ELECTRONIC CONTROL SYSTEM

DESCRIPTION 82.00.00

At the heart of the air conditioning control module is a digital micro-processor which receives data signals from driver controlled switches, then by comparing this data with the signals received from the various temperature sensors and the feedback devices it calculates the output voltages needed to operate the blower motors at the required speed, the flap servo motors to the required positions, also the compressor and the vacuum solenoids to acheive the temperature requirements selected for the vehicle.
Although the control module cannot be repaired in service, a complete set of test pins are accessible for testing the system. Great care must be exercised when connecting the test equipment for the control module will be irreparably damaged should any of the test pins be momentary shorted together.

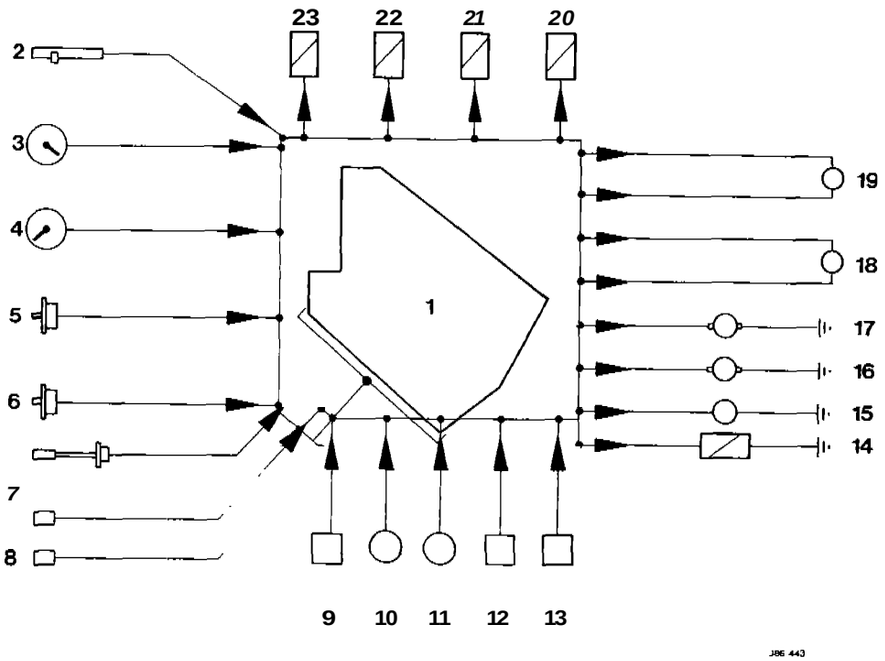


Fig 1

Key to Diagram

1 Control module
2 Differential temperature control
3 Temperature control
4 Blower motor switch
5 Ambient temperature sensor
6 In-car temperature control
7 Evaporator temperature switch
8 Solar sensor
9 Coolant temperature switch
10 Flap feedback potentiometer
11 Flap feedback potentiometer
12 Blower motor feedback
13 Blower motor feedback
14 High speed relay
15 Compressor clutch
16 Blower motor
17 Blower motor
18 Flap servo motor
19 Flap servo motor
20 Defrost vacuum solenoid
21 Recirculation vacuum solenoid
22 Centre vent vacuum solenoid
23 Water valve vacuum solenoid

TEMPERATURE DISTRIBUTION SYSTEM

DESCRIPTION 82.00.00

The air conditioning unit case consists of three parts, the rear of which carries the evaporator, the front is then split in two to enable the rotary flaps to be inserted. Foot outlet boxes are moulded in plastic and are removable for access.

The method used to achieve the required air temperature is known as a series parallel system. All the air into the unit passes through the evaporator, then depending on the position of the flaps either passes through the heater matrix to be heated, or bypasses the heater matrix completely, or a combination of both to achieve the air temperature required (see illustrations).

The system employs two flaps that are driven to the required position (determined by the control system) by servo motors and gear-box assemblies.

The motors can rotate in either a clockwise or anti-clockwise direction depending on the direction of current flow through the motor.

The flap positions are monitored by feedback potentiometers which supplies a voltage signal to the control module indicating the flap position.

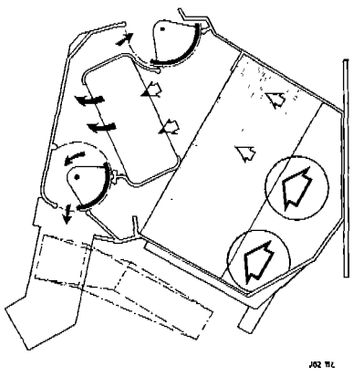


Fig 1

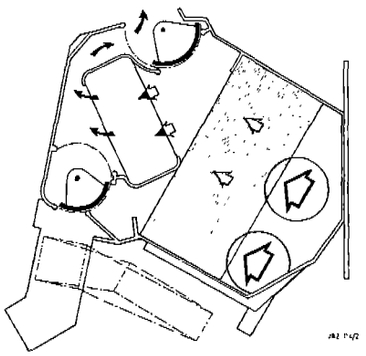


Fig 3

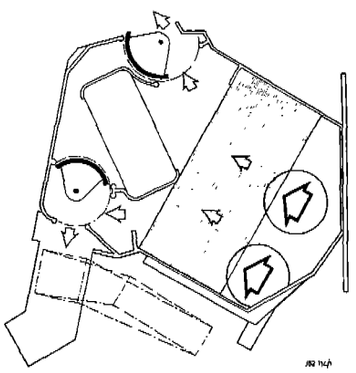


Fig 2

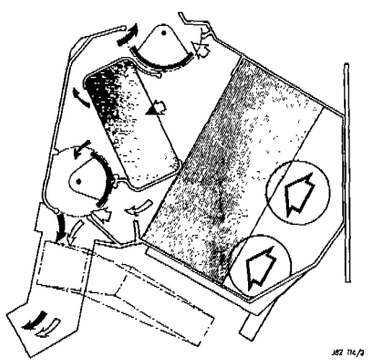


Fig 4

AIR CONDITIONING SWITCH CONTROL PANEL

DESCRIPTION 86.00.00

The switch control panel contains a blower motor control rotary switch, auto/manual mode switch, air switch, humidity control switches, temperature differential selector and a in-car temperature selector. The control panel producesdigital outputs which are suppliedto and used by the electronic control module.

The airflow of the system from the blower motors is controlled by the rotary switch located on the left hand side of the control panel. The switch has five positions:- OFF, LOW, NORM, HIGH, and DEFROST.

In the OFF position the system is not operational. Power to the electronic control module (E.C.M.) and to the control potentiometers is removed, but a signal is sent to the E.C.M. to ensure the flaps are closed preventing outside air from entering the system.

In the LOW, NORMAL and HIGH positions, information regarding the range of fan speed selected is received by the control module from the control switch. Signals are also received by the E.C.M from the temperature selector, feedback circuits and the various sensors. The fan speed is then electronically controlled by the E.C.M. So by selecting LOW, NORM or HIGH a level of speed in the range selected is received dependent on the vehicle requirements. Should a low fan speed be selected the control module will maintain the speed of the fan motors within a range of low speeds depending on the temperature requirement of the vehicle. There are no distinct steps between the fan speeds, but a gradual increase or decrease of speed.

When DEFROST is selected the fans are electronically controlled to operate at maximum speed, the screen vents open, maximum heating is obtained and the lower flaps fully close (it can take up to a maximum period of 30 seconds to complete this operation).

The control situated on the right hand side of the control panel is the temperature demand control. The temperature requirements of the vehicle within the range of 19 to 29°C can be selected by the setting of this control. With the control turned to the fully anti-clockwise position maximum cooling is obtained, and to obtain maximum heating turn the control fully clockwise.

When the mode button is set in the auto mode the control system use all the temperature sensors in relation to the temperature selected by the temperature demand control. The system then automatically adjust the flaps for heating or cooling modes to achieve the disired results. Blower fan speeds are also selected to increase or decrease the volumn of air flow, depending upon the differences between the various temperature sensors and the selected temperature.

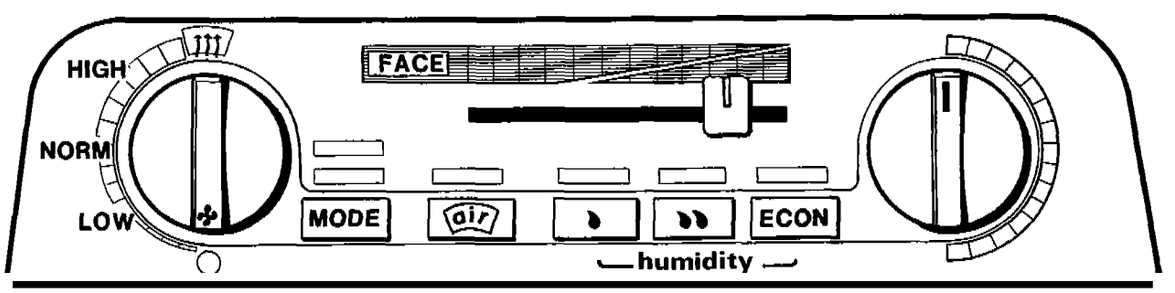
When the button is set in the manual mode it overrides the temperature sensors and the system will obtain the temperature selected.

The air button (demist) when pressed will cause the defrost flaps to the screen to open.

The maximum and minimum limits of the evaporator temperature are determined by the setting of the humidity controls. When the switch with one teardrop is selected the evaporator temperature is controlled between 3.9 to 4.15°C. When the switch with two teardrops is selected the evaporator temperature range is between 7.1 to 7.35°C. If neither of the two humidity buttons are selected, the evaporator temperature is controlled between 0 to 0.25°C.

With the application of the econ button, the compressor clutch is switched off and the compressor is disengaged rendering the air conditioning inoperative. A second application of this button gives maximum air conditioning with the evaporator temperature controlled between 0 to 0.25°C.

The slide control (Air Differential Control) is used to alter the temperature of air being distributed through the face level vents. To increase the temperature of air being delivered through the vents, the slide control is moved to the right and to decrease the temperature the control is moved to the left.



J82 160

Fig 1

TEMPERATURE SENSORS

DESCRIPTION *82.00.00*

There are three temperature sensors fitted into the system, the ambient temperature sensor, the in-car temperature sensor and the evaporator temperature sensor. All three sensors are electrically identical, but the evaporator temperature sensor is physically different and is not interchangeable with either the ambient or the in-car temperature sensors.
An input voltage is supplied to the sensors from pin 43 of the control module. The temperature sensing signal from the sensors is then fed back into the control module via pin 34 for the ambient temperature, pin 4 for the in-car temperature sensor and pin 5 for the evaporator temperature sensor. The sensors are semi-conductor devices which are accurate over a wide range. The semi-conductor is similar to a zenor diode in as much as it allows current to flow in reverse bias, but the current flow varies wth temperature. The sensor assembly has a built in potentiometer which is preset and must not be adjusted.

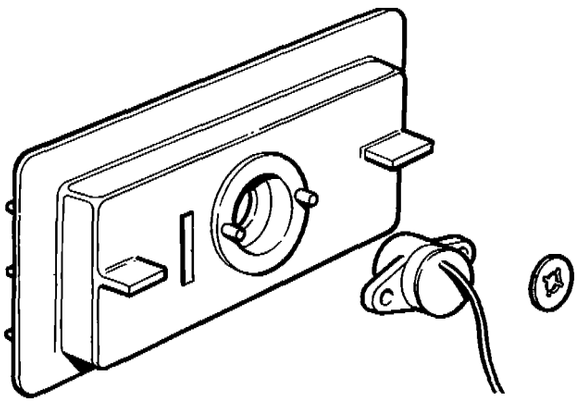


Fig 1

SOLAR SENSOR

DESCRIPTION *82.00.00*

A solar sensor (Fig 1) is fitted to reduce the temperature demand by a maximum of **2°C** in direct sunlight. This has the effect of leaving the in-car temperature stable whilst reducing air outlet temperatures to compensate for increased solar load. This sensor is constructed round a photo transistor whose sensing voltage will vary with the ambient light level. An input of 5 volts is supplied to the sensor from pin 43 of the control module. The sensing voltage from the sensor is then fed back into the control module via pin 36.

COOLANT TEMPERATURE SWITCH.

DESCRIPTION **82.00.00**

A water temperature switch (Fig 2) is fitted ***to*** the lower side of the heater matrix inlet pipe. Its contacts are open at temperatures below 40°C, this will prevent the fans from operating when heat is required until relatively hot coolant is flowing through the system.

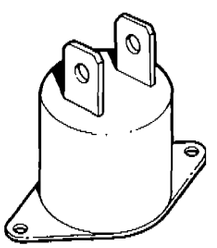


Fig 2

BLOWER MOTOR SPEED CONTROL

DESCRIPTION **82.00.00**

Mounted in the outlet of the blower motor units are heatsink assemblies each of which consists of an interferencesuppressor diode, a feedback isolation diode and a power transistor, The unit is supplied with positive battery voltage via an ignition switch controlled fuse. On all fan speed except high speed the negative circuit for the fan motor is via the power transistor and the control module. The feedback diode enables the control module to sense the voltage at the negative terminal of the fan motor and so calculate the speed of the blower motor. With the fan motor switched to high speed the high speed relay is energised thus closing the relay contacts giving the fan motor negative circuit a direct path to earth via the relay contacts, so bypassing the transistor and the control module.

COMPRESSOR CLUTCH CONTROL

DESCRIPTION **82.00.00**

The output from pin 20 of the control module is used to energise the compressor clutch relay which will result in the relay contacts closing allowing battery voltage to the clutch winding via a thermal fuse, and to the cooling fan relay coil to allow the cooling fan to operate when the air conditioning clutch is engaged.

SUPERHEAT SWITCH AND THERMAL FUSE

DESCRIPTION **82.00.00**

A superheat swich is included in the compressor clutch circuit to provide a compressor protection system. The superheat switch and thermal fuse guards against a low refrigerant charge or blockages causing extreme superheated refrigerant vapour conditions resulting in compressor damage. The thermal fuse is a sealed unit containing a heater and a meltable fuse. The superheat switch is located in the rear of the compressor in contact with the suction side refrigerant vapour. With a low refrigerant charge or a blockage the pressure drops and the temperature rises. This condition closes the superheat switch contacts which completes the thermal fuse heater circuit, melts the fuse, disconnects the battery supply to the compressor clutch winding and the thermal fuse heater. The compressor ceases to operate and damage from insufficient lubrication will be avoided.

The thermal fuse melts at 157 to 182°C.

Time taken	2.0 minutes	**14V**
	5.5 minutes	11.5V

The heater resistance, cold 8 to 10 ohms.

CAUTION: After a thermal fuse melt, establish and rectify the cause before replacing the thermal fuse unit complete.

VACUUM SYSTEM

DESCRIPTION *82.00.00*

The vacuum supply to four solenoids (Fig 1) in the system is from the engine manifold via a reservior and a non return valve.
The reservior is located under the battery. The components operated by the solenoids are:–

1 Defrost/Demist **flaps** which are held closed by vacuum is identified by a green vacuum supply tube.
2 Recirculation/Fresh air flaps which are held closed by vacuum is identified by a blue vacuum supply tube.
3 Centre vent, which is opened by vacuum is identified by a black vacuum supply tube.
4 Water valve which is closed by vacuum and is identified by a red vacuum supply tube.

The vacuum supply to the centre vent and recirculation/ fresh air flaps have built restrictors so that the operation of these flaps is slowed down to avoid the risk of the system hunting. The recirculation flaps can take up to 30 seconds to change state.

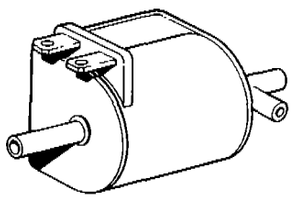


Fig 1

COMPRESSOR

DESCRIPTION 82.00.00

The Sanden709 compressor contains seven cylinders.
The magnetic clutch is engineered with the compressor as a complete assembly resulting in a relatively small unit which is of lightweight construction.
The compressor may be operated in either a clockwise or anticlock wise rotation and can be mounted up to 90 degrees from its upright position.
The compressor incorporates a lubrication system which reduces the oil circulation ratio to a level of less than 2% at 1800 rpm.
An oil deflector and positive pressure differential lubrication system promotes oiling to the cylinder wall, piston rod assemblies, main bearings and shaft seal.
Oil circulation to the refrigeration circuit is kept to a minimum.
The compressor is charged with 4.6 fluid ounces (135 cc) of Sunico **No 5GS** oil at the factory. Only this oil or the equivalent. oils Texaco Capella E or Virginia Chemicals 500 viscosity should be used when adding or changing oil.
Refrigerant **12** is the only refrigerant that can be used in the Sanden compressor. Certain refrigerants, such as methyl and chloride deteriorate aluminum. Others are not compatible with the proper operating temperature and pressures.
Since many of the compressor parts are made of aluminum alloys, exercise great care not to damage machine surfaces.

Adhere to the torque specifications inserting cap screws to "finger-tight" Then use a suitable torque wrench.

Compressor Oils

Sunico No 5GS
Texaco Capella E
Virginia Chemicals 500 Viscosity

TORQUE SPECIFICATIONS (Do not exceed the upper limit)		
Item	ft/lbs	Kg/m
Clutch retaining nut	25-30	3.4-4.2
Cylinder head cap screws	22-25	3.0-3.4
Service port "O" ring	9-12	1.2-1.7
Oil filler plug	6-9	0.8-1.2
High pressure hose	18-22	2.5-3.0
Low pressure hose	22-25	3.0-3.4
Drive belt (new)	100	13.8
Drive belt (after run in)	80-90	11-12.5
Clutch wire clamp screw	26-46	22-38
Field coil cap screws	17-23	15-20
Charge valve cap	48-68	40-60

Key to Illustration

1 Service port
2 Cylinder head
3 Hose connection
4 Anti-rotation gear
5 Oil filler plug
6 Planet plate
7 Clutch bearing
8 Electromatic clutch
9 Valve plate assembly
10 Cylinder & valve plate gasket
11 Cylinder block
12 Piston
13 Cam rotor
14 Needle thrust bearing
15 Front housing & "O" ring
16 Shaft seal

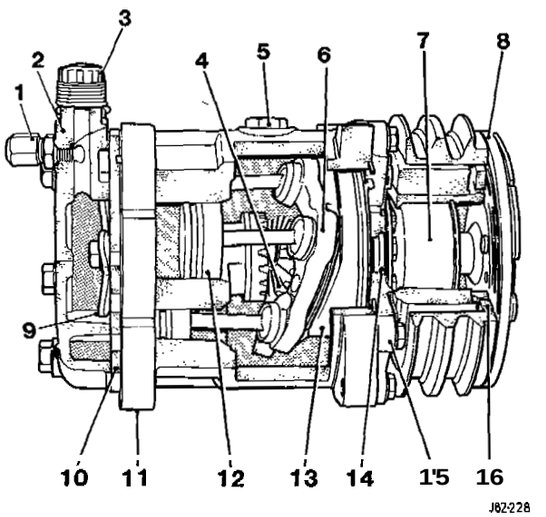


Fig 1

CONDENSER

DESCRIPTION 82.00.00

The condenser (Fig 1) consists of a refrigerant coil mounted in a series of thin cooling fins to provide a maximum of heat transfer in the minimum amount of space. It is usually mounted directly in front of the car radiator so that it receives the full flow of RAM AIR. Ram air is the air flow induced by the forward motion of the car and the suction of the cooling fan. The condenser receives heat laden high pressure refrigerant vapour from the compressor. The refrigerant enters the inlet at the top of the condenser as a high pressure very hot vapour, and as the vapour passes down through the condenser coils. Heat will follow its natural tendency and move from hot refrigerant vapour into the cooler ram air as it flows across the condenser coil fins. When refrigerant vapour reaches the temperature and pressure that will induce a change of state a large quantity of heat will be transferred to the outside air and the refrigerant will change from high pressure hot vapour to a high pressure warm liquid.

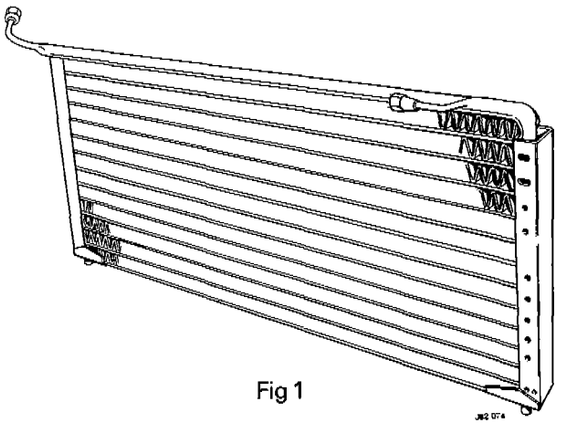


Fig 1

DRIER BOTTLE

DESCRIPTION 82.00.00

The drier bottle (Fig 2) has two separate functions. First it is a storage tank, since the amount of refrigerant required by the evaporator varies under different operating conditions. It receives the high pressure warm refrigerant liquid from the condenser through its inlet line and delivers the refrigerant to an expansion valve through its outlet line. Secondly it contains a filter and desiccant to remove and retain foreign particles as well as moisture from the refrigerant which would be harmful to the system if allowed to circulate with the system.

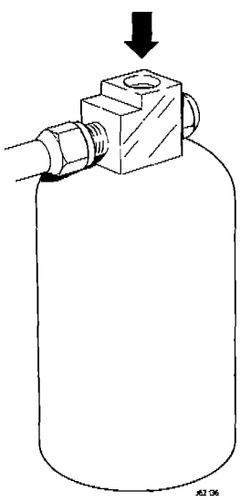


Fig 2

SIGHTGLASS

DESCRIPTION 82.00.00

A sight glass (Fig 1) is located on the output side of the drier bottle through which the refrigerant flows is used to indicate the condition of the refrigerant charge. A clear sight glass normally indicates the system has a correct charge of refrigerant. It may also indicate the system has a complete lack of refrigerant, this will be accompanied by a lack of any cooling action by the evaporator. Also the system may be overcharged, this must be verified with test gauge readings.

Foam or a constant stream of bubbles indicates the system does not contain sufficient refrigerant. Occasional bubbles when the system is first started is normal.

Foam or a heavy stream of bubbles indicates the refrigerant is very low. Oil streaks on the sight glass indicates a complete lack of refrigerant. A cloudy sight glass indicates that the desiccant contained in the receiver/drier has broken down and is being circulated through the system.

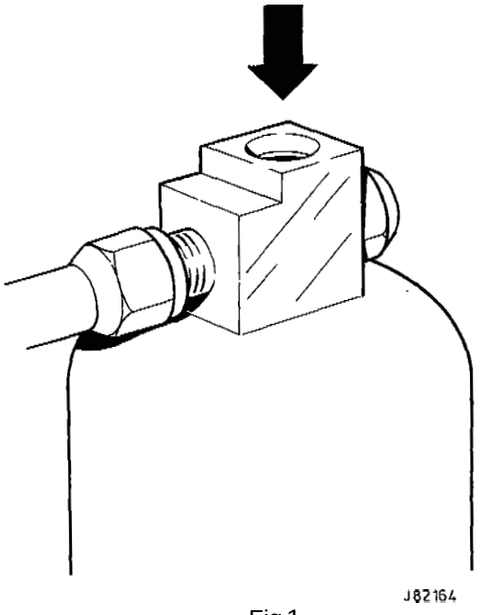


Fig 1

EVAPORATOR

DESCRIPTION 82.00.00

The evaporator (Fig 2) consists of a refrigerant coil mounted in a series of thin fins to provide a maximum amount of heat transfer in a minimum amount of space. It is mounted in a housing where warm air from the vehicle interior is blown across the coils and fins.

The evaporator receives refrigerant from the expansion valve as a low pressure cold atomized liquid. As this cold liquid refigerant passes through the evaporator coils, heat will follow its natural tendency and move from the warm air into the cooler refrigerant.

When the liquid refrigerant reaches a temperature and pressure that will induce a change of state a large quantity of heat will move from the air into the refrigerant and the refrigerant will change from a low pressure cold atomized liquid to a low pressure cold vapour.

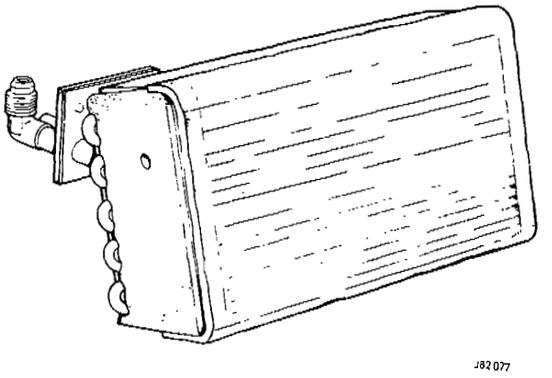


Fig 2

EXPANSION VALVE

DESCRIPTION 82.00.00

The expansion valve is the dividing point between the high and low pressure sides of the system, and automatically meters the high pressure, high temperature liquid refrigerant through a small orifice, controlled by a metering valve into the low pressure, cold temperature side of the evaporator matrix. The refrigerant must be controlled to obtain the maximum cooling while assuring complete evaporation of the liquid refrigerant within the evaporator. To do this, the valve senses the outlet pipe temperature, the inlet pipe pressure, and increases or decreases the flow of refrigerant liquid to maintain the outlet temperature constant.

The expansion valve continually meters the exact amount of refrigerant required to supply some liquid refrigerant throughout the evaporator coil while ensuring that all of the refrigerant will be vapourized at the evaporator outlet. The refrigerant vapour then returns to the low (suction) side of the compressor.

REFRIGERATION CYCLE

DESCRIPTION 82.00.00

The belt-driven compressor draws in the refrigerant vapour at low pressure and compresses it. The pressurized refrigerant is then forced into the condenser located in front of the engine cooling radiator so that it receives the full flow of ram air.

The refrigerant enters the condenser as a high pressure very hot vapour. As this hot vapour passes through the condenser coils heat will follow its natural tendency and move from the hot refrigerant vapour into the cooler ram air as it flows across the condenser coils.

When the refrigerant vapour reaches the temperature and pressure that will induce a change of state a large quantity of heat will be transfered to the outside air. The refrigerant then changes from a high pressure vapour to a high pressure warm liquid. This high pressure warm liquid flows from the outlet of the condenser to the drier bottle.

The drier bottle is a storage tank which receives the high pressure warm refrigerant liquid from the condenser, filters and retains any foreign particles or moisture from the refrigerant which would be harmful to the system if allowed to circulate with the refrigerant. The clean refrigerant passes through to the expansion valve via the sight glass.

The refrigerant flow to the evaporator must be controlled to obtain maximum cooling while assuring complete evaporization of the liquid refrigerant within the evaporator. This is accomplished by the expansion valve which is a metering device which changes the pressure of the liquid refrigerant from a high pressure to a low pressure liquid. As the refrigerant passes through the metering orifice in the valve, the pressure and the temperature of the refrigerant is reduced so the refrigerant leaves the expansion valve as a low pressure, cold atomized liquid. The temperature of the refrigerant is then lower than the temperature of the air in the vehicle so that a heat exchange from the warm air to the refrigerant can take place in the evaporator.

As this cold atomized liquid refrigerant passes through the evaporator coils, heat will follow its natural tendency and move from the warm air into the cooler refrigerant. When the refrigerant reaches a temperature and pressure that will induce a change of state, a large quantity of heat will move from the air into the refrigerant. The refrigerant will then change from a low pressure cold liquid to a low pressure cold vapour. The refrigerant vapour then returns to the low (suction) side of the compressor.

SAFETY

PRECAUTIONS 82.00.00

The air conditioning system is designed to use only Refrigerant 12 (dichlorodifluoromethane). Extreme care must be taken NOT to use a methylchloride refrigerant. The chemical reaction between methylchloride and the aluminium parts of the compressor will result in the formation of products which will burn spontaneously on exposure to air, or decompose with violence in the presence of moisture. The suitable refrigerant is supplied under the following trade names.

FREON 12. **ARCTON 12. ISCEON 12.**

Or any refrigerant with a specification of 12.

WARNING: GOGGLES AND GLOVES MUST BE WORN **WHILE WORKING WITH REFRIGERANT. EXTREME CARE SHOULD BE EXERCISED IN HANDLING REFRIGERANT. LIQUID REFRIGERANT** AT **ATMOSPHERIC PRESSURE BOILS AT** 29°C. **SERIOUS DAMAGE OR BLINDNESS MAY OCCUR IF REFRIGERANT IS ALLOWED TO COME INTO CONTACT** WITH **THE EYES.**

FIRST AID: If refrigerant should come into contact with the eyes or skin, splash the eyes or afected area with cold water for several minutes. DO NOT RUB. As soon as possible thereafter, obtain treatment from a Doctor or an eye specialist.

GOOD PRACTICE.

1 Protective sealing plugs must be fitted to all disconnected pipes and units.
2 The protective sealing plugs must remain in position on all replacement components and pipes until immediately before assembly.
3 Any part arriving for assembly without sealing plugs in position must be returned to the supplier as defective.
4 It is essential that a second backing spanner is always used when tightening or loosening all joints. This minimises distortion or strain on components or connecting hoses.
5 Components must not be lifted by connecting pipes, hoses or capillary tubes.
6 Care must be taken not to damage fins on the condenser or evaporator matrices. Any damage must be rectified by the use of fin combs.
7 Before assembly of tube and hose joints, use a small amount of clean new refrigerant oil on the sealing seat.
8 Refrigerant oil for any purpose must be kept very clean and capped at all times. This will prevent the oil absorbing moisture.
9 Before assembly the condition of joints and flares must be examined. Dirt and even minor damage can cause leaks at the high pressure points encountered in the system.
10 Dirty end fitting can only be cleaned using a cloth wetted with alcohol.
11 After removing sealing plugs and immediately before assembly, visually check the bore of pipes and components. Where any dirt or moisture is discovered, the part must be rejected.
12 All components must be allowed to reach room temperature before sealing plugs are removed. This prevents condensation should the component be cold initially.
13 Before finally tightening hose connections ensure that the hose lies in the correct position, is not kinked or twisted and will not be trapped by subsequence operations, e.g. refitting or closing bonnet.
14 Check that hoses are correctly fitted in clips or straps.
15 The compressor must be stored horizontally with the sump down. It must not be rotated before fitting and charging. Do not remove the shipping plate until immediately before assembly. Always use new "O" ring seals in those joints that incorporate them.
16 Components or hoses removed must be sealed immediately after removal.
17 After the system has been opened the receiver/drier must be renewed.
18 Before testing, run the engine until normal running temperature is reached. This ensures that sufficient vacuum is available for test. For cooling tests the engine must be running for the compressor clutch to operate.

MANIFOLD GAUGE SET

DESCRIPTION 82.00.00

The manifold gauge set (Fig 1) is used to determine the systems high and low pressures, the correct refrigerant charge, system diagnosis and operating efficiency. It is designed to read both high and low pressures at the same time, because these pressures must be compared to determine correct system operation.
Referring to the illustration, a vertical line drawn through the centre of the centre service hose will divide the manifold set into its LOW and HIGH side.

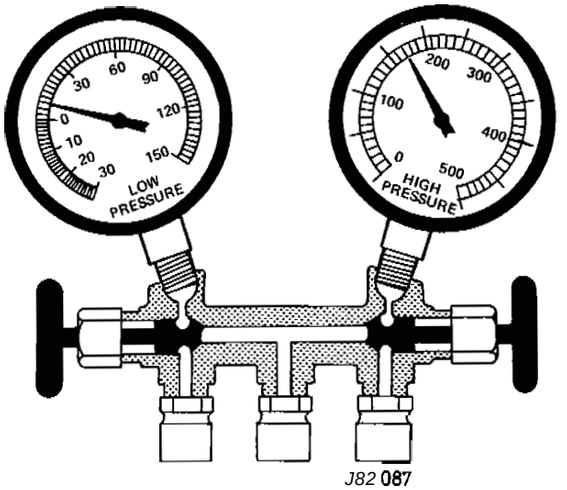


Fig 1

The manifold gauge set consists of a charging manifold fitted with two stop hand valves, a compound gauge and a high pressure gauge. The compound gauge which should be connected to the suction or low pressure side of the system registers both vacuum and pressure. The high pressure gauge is connected to the delivery or high pressure side of the system.

WARNING: FOR SAFETY REASONS THE ACCURACY OF BOTH GAUGES MUST BE CHECKED AT FREQUENT INTERVALS.

Gauge Manifold

The manifold is designed to control refrigerant flow when connected into the system, pressure is registered on both gauges at all times. During tests both the high and low side hand valves are in a closed position (turned inward until the valve is seated).
Refrigerant will flow around the valve stems to the gauges and register the system low and high pressures on the respective gauges. The hand valves isolate the low and the high sides from the central portion of the manifold.

Low Pressure Side Gauge

This gauge has a dial reading from 0 to 150 lbf/in^2 (pressure scale) in a clockwise direction and a 0 to 30 inches of mercury (vacuum scale) in counter clockwise direction. This low pressure gauge is called a compound gauge, it has a dual purpose which is to register both pressure and vacuum. This gauge is used to measure the evaporator outlet pressure.

High Pressure Side Gauge

This gauge has a dail reading from 0 to 500 lbf/in^2 in a clockwise direction and is a pressure gauge only.

Connecting The Gauge Set

A test hose connected to the fitting directly under the low side gauge is used to connect the low side of the test manifold into the low side of the system, and a similar connection is found on the high side.
When connecting the gauge manifold set to the air conditioning system an access valve core removing tool is available for connecting the test hoses to the high and low sides of the system.
By using the valve removing tool it will enable the valve core to be removed and held back inside the tool eliminating restrictions thereby providing a full flow of refrigerant.

WARNING: UNDER NO CIRCUMSTANCES OPEN THE HIGH SIDE HAND VALVE WHILE THE AIR CONDITIONING SYSTEM IS IN OPERATION. IF THE HIGH SIDE HAND VALVE SHOULD BE OPENED WHILE THE SYSTEM IS OPERATING, HIGH PRESSURE REFRIGERANT WILL BE FORCED THROUGH THE HIGH SIDE GAUGE AND TO THE REFRIGERANT CONTAINER IF IT IS ATTACHED. THIS HIGH PRESSURE MAY RUPTURE THE CONTAINER OR POSSIBLY BURST THE FITTING AT THE SAFETY CONTAINER VALVE, RESULTING IN MUCH DAMAGE INCLUDING PERSONAL PHYSICAL INJURY.

With the engine switched off, remove the protective caps from the schraeder valves.
Fit the access valve removal tool to the schraeder valves.
Ensure that both the manifold hand valves are in the closed position.
Connect the high pressure manifold gauge hose to the high pressure side of the air conditioning side of the system (high side will always be the line from the compressor to the condenser).
Connect the low pressure or compound gauge hose to the low pressure side of the air conditioning system.
Using the access valve removal tool loosen and screw out the valve cores.

Purging The Test Hoses

With the manifold test set attached to the system.
Purge the high pressure test hose by cracking open the high pressure side hand valve on the manifold gauge set for 3 to 5 seconds. This will allow the system refrigerant to purge the air from the test hose and discharge through the manifold centre test hose. Immediately close the high pressure side hand valve.
Purge the low pressure test hose in the same manner by cracking open the low pressure side hand valve manifold gauge set for 3 to 5 seconds, then close the hand valve.

Stabilizing The System

The manifold gauge set is now attached to the system and the test hoses purged of air. With both hand valves closed, the system must be operated for a few minutes to stabilize all pressures and temperatures throughout the system in order to obtain accurate test gauge readings.
Proceed as follows

1. Place all test hoses, gauge set and other equipment away from all engine moving parts. Also keep the hoses from touching the hot engine manifold.
2. Start the engine and adjust engine speed to fast idle
3. Turn on the air conditioning and set for maximum cooling with blower fans on high speed
4. Open the car doors and/or windows (to quickly eliminate car interior heat)
5. Operate the system under these conditions for 5 to 10 minutes, the system will be stabilized and ready for testing.
6. Check the system for full refrigerant by noting the sight glass indications. Some refrigerant loss will occur over a period of time, replacing this refrigerant loss will constitute much of the service required on the air conditioning system.

Adding Refrigerant

The air conditioning system must contain a full refrigerant charge before an accurate system check can be made. An insufficient charge is indicated in the sight glass by a stream of bubbles or foam.

Connect the manifold test set to the air conditioning system as described on page 82-14.
Connect the centre hose of the manifold test set to a supply of refrigerant, open the refrigerant supply valve, purge the centre hose by momentarily cracking the connection at the manifold block retighten the connection.
Start the engine and operate the air conditioning. With the system operating, slowly open the low side manifold hand valve to allow refrigerant to enter the system.

NOTE: The low side of the system is the suction side and the compressor will pull refrigerant from the container into the system.

CAUTION: THE HIGH **SIDE MANIFOLD** HAND **VALVE** MUST **NEVER BE OPENED WHILE** THE SYSTEM IS **OPERATING.** THIS WOULD **RESULT** IN **REFRIGERANT** BEING PUMPED **BACK** INTO THE **CONTAINER** WHICH COULD **CAUSE** IT TO BURST.

With the refrigerant container in an upright vapour/position, add refrigerant until the sight glass clears or the gauge readings are normal.

CAUTION: Never turn the container into a position where liquid refrigerant will flow into the system.

Close the low side manifold hand valve and refrigerant container valve.
Continue to stabilize the system and check for normal charge.

Leak Test

A high proportion of all air conditioning work will consist of locating and repairing leaks. Many leaks will be located at connections and are caused by vibration. They may only require the retightening of a connection or clamp. Occasionally a hose will rub on a structural part of the vehicle and create a leak, or a hose will deteriorate which will require a replacement. The specified maximum leakage rate at each fitting is 0.5 kg of **R12** in 40 years and a leak detector capable of operating to this accuracy must be provided. To check place the leak detector probe at the lowest point of each joint, pause for **two** seconds. Do not wave the probe about as refrigerant is heavier than air and will flow to the lowest point. If a leak is greater than 0.5 kg in forty years is detected identify the leak point for rectification.
Check that the leaking fitting has been tightened to the correct torque. If the torque is low, rectify and repeat leak test. If the torque is satisfactory, depressurise the system, dismantle the leaking connection and check the quality of the fitting.
If the fitting is satisfactory, clean and reassemble after applying a thin film of refrigerant to the seat of a flare fitting, or a new oiled "O" ring to an "O" ring fitting. Tighten to the correct torque.
Charge the system with *200* g of R12 and leak test the rectified system. If the system is satisfactory, depressurise, evacuate and recharge the system.
If the system is unsatisfactory, i e leakage greater than 0.5 kg in forty years, depressurise **and** replace the leaking assembly.

pressureTemperature Relationship

Note: Pressures shown are under exact conditions (see test conditions) and are not necessarily true for every car checked.
Ambient Temperature is given as the air surrounding the condenser and is taken 5 cms in front of the condenser.

Test Conditions

1 Use a large fan to substitute for normal ram air through the condenser.

2 Engine adjusted to fast idle speed.

3 All conditions equivalent to 30 mph or 48 kmh.

Ambient Temp °C	High Pressure Gauge Reading lbf/in^2	Low pressure Gauge reading lbf/in^2	Evaporator Temp °C
16	95-115	10	–16
18	105-125	12	–14
21	115-125	14	–12
24	130-150	16	–10
27	150-170	18	-8
29	165-185	20	–6
32	175-195	22	–5
35	185-205	24	–4
38	210-230	26	–3
41	230-250	28	–1
43	250-270	30	0
46	265-285	35	2
49	280-310	40	5
		45	9
		50	11
		55	14
		60	17
		65	19
		70	21

Normal operating ambient temperature range is: – 24 to 43°C.
Normal operating evaporator temperature range is: – –12 to **0°C.**

Under normal running conditions system pressure should be as follows: –

Low side: –	– 1.05 to 2.10 kgf/cm^2 15 to 30 lbf/in^2	103.42 to 206.84 kN/m^2
High side: –	13.00 to 14.40 kgf/cm^2 185 to 205 lbf/in^2	1275.50 to 1434.10 kN/m^2

FAULT FINDING WITH MANIFOLD GAUGE SET

Refrigerant Slightly Low.

Complaint.

Little or no cooling.

Condition.

1 The low side gauge reading is too low.
2 The high side gauge reading is too low.
3 A stream of bubbles evident in the sight glass.
4 The discharge air from the evaporator only slightly cool.

Diagnosis.

The system low on refrigerant. Due to slight leak.

Correction.

1 Test the system for leaks.
2 Depressurize the system.
3 Repair the leaks, and if necessary renew hoses or units.
4 Check the compressor oil level. The system may have lost oil due to leakage.
5 Evacuate the system using a vacuum pump.
6 Recharge the system with new refrigerant.
7 Operate the system and check the performance.

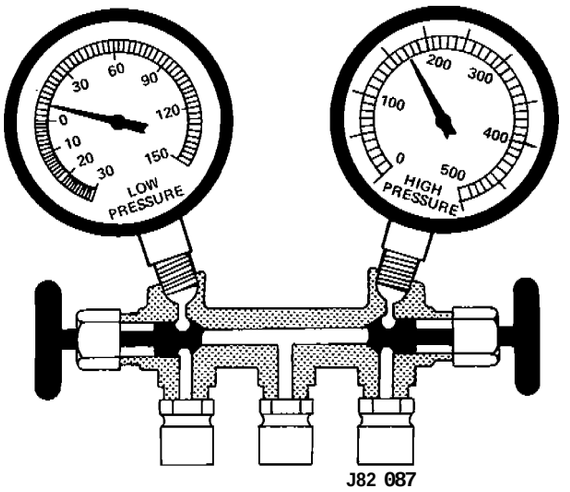


Fig 1

Refrigerant Excessively Low.

Complaint.

Cooling is not adequate.

Condition.

1 The low side gauge is reading very low.
2 The high side gauge is reading very low.
3 No bubbles or liquid evident in the sight glass.
4 The discharge air from the evaporator is warm.

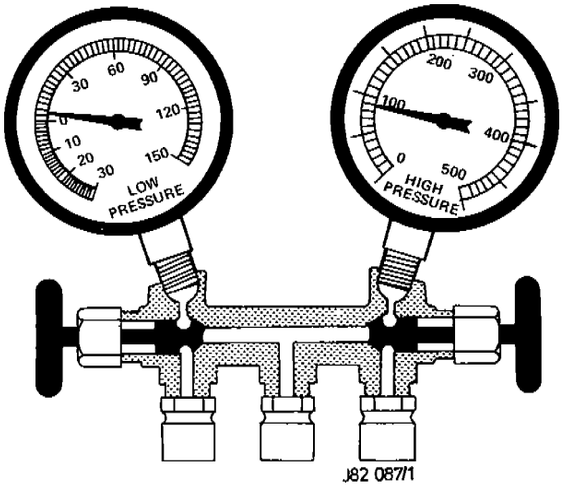


Fig 2

Diagnosis.

The system is excessively low of refrigerant a serious leak is indicated.

Correction.

1 Test the system for leaks.

NOTE: Partially recharge the system before testing the system for leaks to ensure that leak detection is obtained,

2 Depressurize the system.
3 Repair the leaks, and if necessary renew hoses or units.
4 Check the compressor oil level. the system may have lost oil due to leakage.
5 Evacuate the system using a vacuum pump.
6 Recharge the system with new refrigerant.
7 Operate the system and check the performance.

Air In The System.

Complaint.

Cooling is not adequate.

Condition.

1 The low side gauge reading is constant and does not drop. The pressure should drop until the compressor cycles (thermostat control)
2 The high side gauge reading is slightly high (or slightly lower especially if a large fan is used to substitute ram air).
3 The sight glass is free of bubbles or only shows an occasional bubble.
4 The discharge air from the evaporator is only slightly cool.

Diagnosis.

Non condensables present in the system.
Air or moisture present instead of a full refrigerant charge.

Correction.

1 Test the system for leaks. Test the compressor seal area very carefully.
2 Depressurize the system.
3 Repair the leaks, and if necessary renew hoses or units.
4 Renew the drier bottle, it is probably saturated with moisture.
5 Check the compressor oil level.
6 Evacuate the system using a vacuum pump.
7 Recharge the system with new refrigerant.
8 Operate the system and check the performance.

Compressor Malfunction.

Complaint.

Cooling is not adequate.

1 The low side gauge reading is too high.

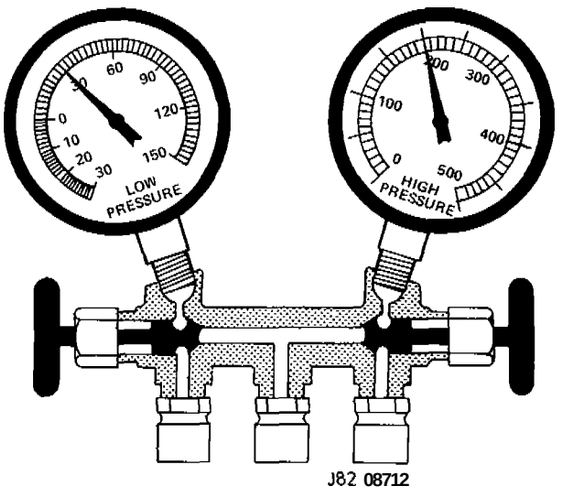


Fig 1

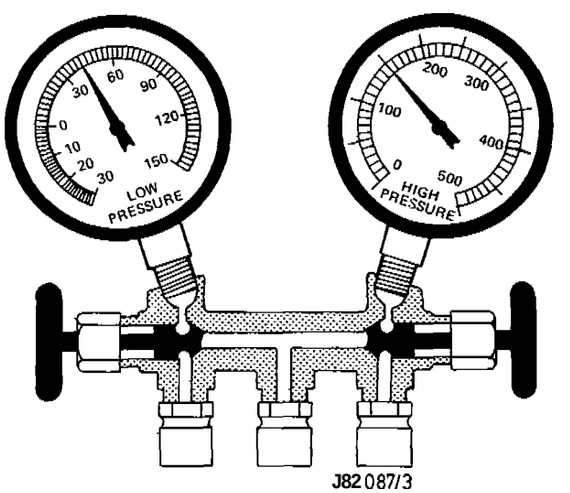


Fig 2

2 The high gauge reading is too low.
3 The sight glass is free of bubbles and the system is fully charged.
4 The discharge air from the evaporator is not sufficiently cool.

Diagnosis.

Internal leak in the compressor.

Correction.

1 Depressurize the system.
2 Renew the compressor and the drier bottle.
3 Evacuate the system using a vacuum pump.
4 Charge the system with new refrigerant.
5 Operate the system and check the performance.

Condenser Malfunction Or System Overcharge

Complaint.

Little or no cooling. Overheating of the engine may also be noted.

Condition.

1 The low side gauge reading excessively high.
2 The high side gauge reading is also excessively high.
3 Bubbles may appear occasionally in the sight glass and the liquid line to the evaporator is very hot.
4 The discharge air from the evaporator is warm.

Diagnosis.

The condenser not operating correctly through lack of cooling caused by too high a high side pressure. The system may have either a normal or overcharge of refrigerant.

Correction.

1 Check the Compressor drive belt for correct tension.
2 Check the condenser for clogged air passages preventing air flow through the condenser.
3 Inspect the condenser mounting for correct radiator clearance.
4 Check the correct fan operation.
5 Check the coolant pressure cap for correct type and operation.

After making the above checks operate the system and check the performance.

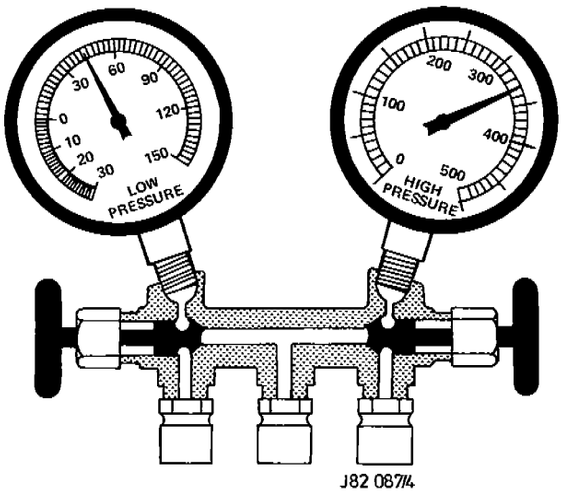


Fig 1

If the Condition is not rectified.

1 Inspect the system for overcharge of refrigerant and rectify as follows.

(A) Discharge the system, until a stream of bubbles appear in the sight glass and both gauge readings drop to below normal.

(B) Add new refrigerant until the bubbles disappear and the pressures are normal. Then add .25 to .5 lb of additional refrigerant.

2 Operate the system and check the performance.

If the gauge readings are still too high.

1 Depressurize the system.
2 Remove and inspect the condenser for oil clogging. Clean and flush the condenser to ensure the free passage refrigerant or renew the condenser.
3 Renew the receiver/drier.
4 Evacuate the system using a vacuum pump.
5 Recharge the system with new refrigerant.
6 Operate the system and check the performance

Moisture In The System.

Complaint.

Cooling is not adequate during the hot part of the day.

Note: Cooling may be satisfactory during the early morning or late evening but is not adequate during the hot part of the day.

Condition.

1 The low side gauge reading normal but may drop into vacuum during testing.
2 The high side gauge reading normal but will drop when the low side drops into vacuum.
3 The sight glass may show tiny bubbles.
4 The discharge air from the evaporator is cold but becomes warm when the low side gauge drops into vacuum.

Diagnosis.

Excessive moisture in the system. Desiccant agent saturated with moisture which is released during high temperatures. The moisture collects and freezes in the expansion valve which stops the refrigerant flow.

Correction.

1 Depressurize the system.
2 Renew the drier bottle.
3 Evacuate the system using a vacuum pump.
4 Recharge the system with new refrigerant.
5 Operate the system and check the performance.

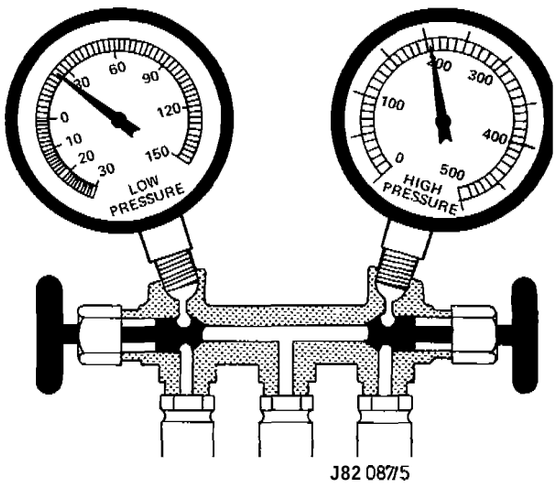


Fig 1

A Large Amount Of Air In The System.

Complaint.

Little or no cooling.

Condition.

1 The low side gauge reading is too high.
2 The high side gauge reading is too high.
3 An occasional bubble in the sight glass.
4 The discharge air from the evaporator is not cool.

Diagnosis.

Air in the system. The refrigerant contaminated by non-condensables (air and/or moisture),

Correction.

1 Depressurize the system.
2 Renew the receiver/drier.
3 Evacuate the system using a vacuum pump.
4 Recharge the system with new refrigerant.
5 Operate the system and check the performance.

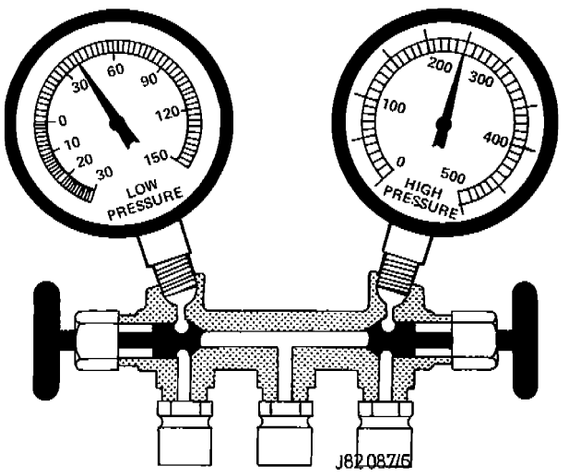


Fig 1

Expansion Valve Malfunction.

The valve stuck open.

Complaint.

Little or no cooling.

Condition.

1 The low side gauge reading is too high.
2 The high side gauge reading is normal or slightly low.
3 The discharge air from the evaporator is warm.
4 The suction hose and the evaporator show signs of heavy sweating.

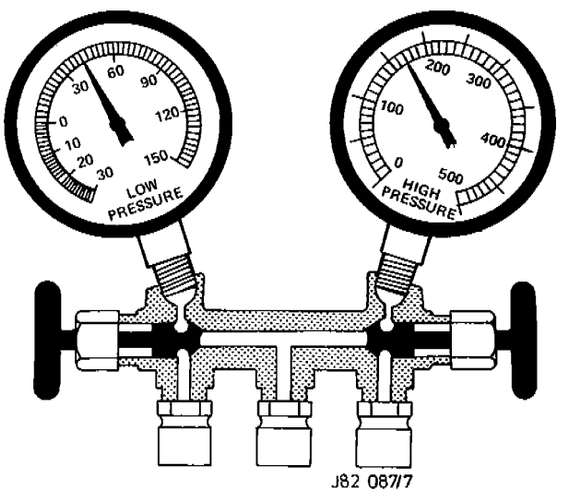


Fig 2

Diagnosis.

The expansion valve allowing excessive flow of refrigerant through the evaporator coils causing flooding of the coils.

Correction.

1 Depressurize the system.
2 Renew the expansion valve.
3 Renew the drier bottle.
4 Evacuate the system using a vacuum pump.
5 Recharge the system with new refrigerant.
6 Operate the system and check the performance.

Expansion Valve Malfunction.

The valve stuck closed.

Complaint.

Cooling is not adequate.

Condition.

1 The low gauge reading is too low (0 or a vacuum).
2 The high side gauge reading is too low.
3 The discharge air from the evaporator only slightly cool.
4 The expansion valve shows signs of heavy sweating or frost.

Diagnosis.

The expansion valve restricting the refrigerant flow.

Correction.

1 Depressurize the system.
2 Renew the expansion valve.
3 Renew the drier bottle.
4 Evacuate the system using a vacuum pump.
5 Recharge the system with new refrigerant.
6 Operate the system and check the performance.

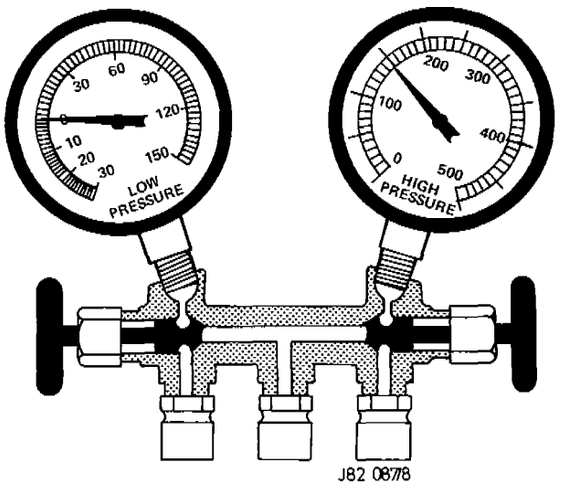


Fig 1

Restriction in the High Pressure Side.

Complaint.

Cooling is not adequate.

Condition.

1 The low side gauge reading is low.
2 The high side gauge reading will build up to an excessively high reading.
3 The discharge air only slightly cool.
4 The high pressurure liquid hose from the drier bottle to the evaporator is cool to the touch or shows signs of heavy sweating or frost.

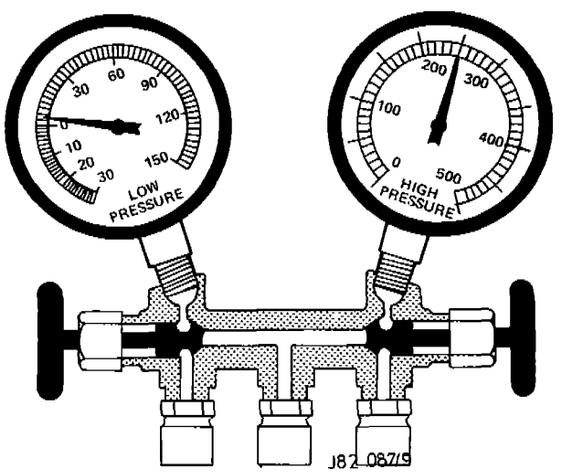


Fig 2

Diagnosis.

A restriction in the receiver/drier or the high pressure liquid hose from the drier bottle results in the compressor removing refrigerant from the evaporator faster than it can enter. This results in a starved evaporator.
Correction.

1 Depressurize the system.
2 Renew the drier bottle and/or the high pressure liquid hoses or other defective parts.
3 Evacuate the system using a vacuum pump.
4 Recharge the system with new refrigerant.
5 Operate the system and check the performance.

AIR CONDITIONING HOSE CONNECTIONS

TORQUE FIGURES **82.00.00**

Component	Position of Fixing	Nm	kgf/m	lbf/ft
Evaporator Hose	Expansion Valve	28-37	2.85-3.78	20.65-27.30
Evaporator Hose	Lower port Expansion Valve	20-27	2.04-2.76	14.75-20.00
Muffler Assembly	Upper port Compressor	40-50	4.08-5.09	29.50-36.87
Evaporator Hose	Muffler	28-37	2.85-3.78	20.65-27.87
Condenser Hose	Muffler	28-37	2.85-3.78	20.65-27.87
Muffler Hose	Condenser	28-37	2.85-3.78	20.65-27.87
Condenser Pipe	Drier Bottle	15-17	1.53-1.73	11.00-12.50
Evaporator Hose	Drier bottle	15-17	1.53-1.73	11.00-12.50
Evaporator Pipe	Expansion Valve	28-37	2.85-3.78	20.65-27.85
Evaporator Pipe	Inner Lower Port Expansion Valve Inner Upper Port	20-27	2.04-2.76	14.75-20.00

AIR CONDITIONING

DEPRESSURIZING 82.30.05

Note: Observe all safety precautions and do not smoke while carrying out the following procedures.
With the engine switched off, remove the protective caps from the schraeder valves. Ensure the manifold gauge set hand valves are in the closed position, then by using the access valve core remover connect the manifold gauge set to the system with the red hose to the high pressure side and the blue hose to the low pressure side. Screw out the valve core to allow the refrigerant to flow. Place the centre hose of the manifold set into a suitable container.
Slowly open the high or low side manifold hand valve and adjust the valve for a smooth refrigerant flow. Watch the refrigerant for any signs of escaping oil and adjust the hand valve to prevent any oil escaping. If oil is lost during the discharge, the compressor oil level will have to be checked and if necessary topped up. As the discharge rate slows down, open the other manifold hand valve so that refrigerant will flow from both high and low pressure sides of the system.
Constantly adjust the hand valves to ensure that oil does not flow.
When a zero reading is shown on both high and low pressure gauges the system is discharged. Close both manifold hand valves.

AIR CONDITIONING

FLUSHING 82.30.03

Flushing the system is an essential function which must be carried out if the system has: –

1 Suffered component or pipe rupture leading to a refrigerant discharge.
2 Suffered component failure leading to the possibility of swarf or other contamination of the system.
3 The system has been left in a uncapped condition for longer than eight hours.
4 If the system has remained open for more than eight hours, the drier bottle must be renewed and a 20 minutes evacuation must be carried out in addition to the flushing procedure.

WARNING:– IT IS VITAL THAT ADEQUATE VENTILATION IS PROVIDED DURING ALL FLUSHING AND ALL SAFETY PRECAUTIONS ARE TAKEN.

Refrigerant R11 should always be used as the flushing agent.
Depressurize the system.
Remove the drier bottle and the compressor.
Discard the drier bottle.

The compressor oil level must be checked.
Stand the bottle of R11 in a container of warm water (approx 50°C) to raise it to its operating pressure.
Disconnect the two pipes from the expansion valve and connect a bridging pipe to the disconnected pipes to complete the circuit.
The filter fitted to the inlet port of the expansion valve must be carefully removed, washed in a solvent, blown dry with air and refitted to the expansion valve.
Renew any faulty components or pipes.
Connect a flexible hose to each of the of the two pipes normally fitted to the compressor and position the free ends in a large container.
Connect a flexible hose to the R11 bottle. Connect the other end of the hose to one of the hoses normally connected to the drier bottle.
With the R11 bottle positioned above the level of the engine and positioned to discharge liquid, open the R11 bottle stopcocks.
When R11 starts flowing into the container close the stopcock and allow flushing liquid to drain through the system for two or three minutes.
Disconnect the flexible hose from the R11 bottle and connect it to a bottle containing R12. Gently open the stopcock on this bottle and observe the R11 flowing into the container. When it stops, allow approximately 30 seconds then close the stopcock. Inspect the flushing liquid, if it dirty repeat the flushing precedure with the R11 bottle reconnected.
If it is clean repeat the flushing procedure with the flexible hose from the R11 bottle connected to the second of the pipes normally connected to the drier bottle.
On re-assembling the system fit a new drier bottle.
Check the compressor oil level.
Reconnect the expansion valve.
Ensure (where necessary) new "O" rings are fitted smeared with CAPELLA "E" oil.
Evacuate and recharge the system with new R12 refrigerant.

AIR CONDITIONING

EVACUATING 82.30.06

Once the system has been opened for repairs, it must be fully evacuated with a vacuum pump to remove all traces of moisture before being recharged with new refrigerant.
Moisture may collect and freeze in the expansion valve which will block the refrigerant flow and prevent the cooling action. Moisture will also react with refrigerant 12 and cause corrosion of the small passages in the system.

The desiccant in the drier bottle can only absorb a limited amount of moisture before it becomes saturated, therefore it is most important to prevent moisture from entering the system, also to remove any moisture which inadvertently entered the system through a leak or an open connection.

The unwanted moisture or air are removed from the system by a vacuum pump.

Remove the protective cap from the low pressure connection on the air conditioning system. Check and **oil** the "O" ring in the low pressure hose ***(8*** Fig **1)** from the manifold of the charging station, and connect it to the low pressure side of the system.

Remove the protective cap from the high pressure side of the air conditioning system. Check and oil the "O" ring in the high pressure hose (9 Fig **1)** from the manifold of the charging station, and connect it to the high pressure side of the system.

Check inlet valve (5 Fig 1) and vent valve (7 Fig **1)** of the charge cylinder and are closed.

NOTE: If the charge cylinder contains refrigerant close the outlet valve (4 Fig 1).

Fully open the low pressure valve **(1** Fig **1),** the high pressure valve (2 Fig **1**) and the vacuum valve (3 Fig **1**).

Switch the vacuum pump on, note the low pressure gauge to make certain that a vacuum is being created in the system **by** the vacuum pump, continue to operate until a vacuum of 13 mmHg **(1**7.50 mb) is obtained.

If this vacuum cannot be attained check the system for leaks.

From the time a vacuum of 13 mmHg **(1**7.50 mb) is attained, run the vacuum pump for at least 6 minutes to be sure complete evacuation has been attained.

Close both gauge hand valves, switch off the vacuum pump, observe the low pressure side gauge reading. The gauge reading should remain stationary at the point where the pump was switched off. Should the gauge return towards zero a leak exists in the air conditioning system.

If the gauge needle remains stationary for 3 to 5 minutes, close both manifold hand valves and disconnect the hose from the vacuum pump.

The air conditioning system is now ready for charging.

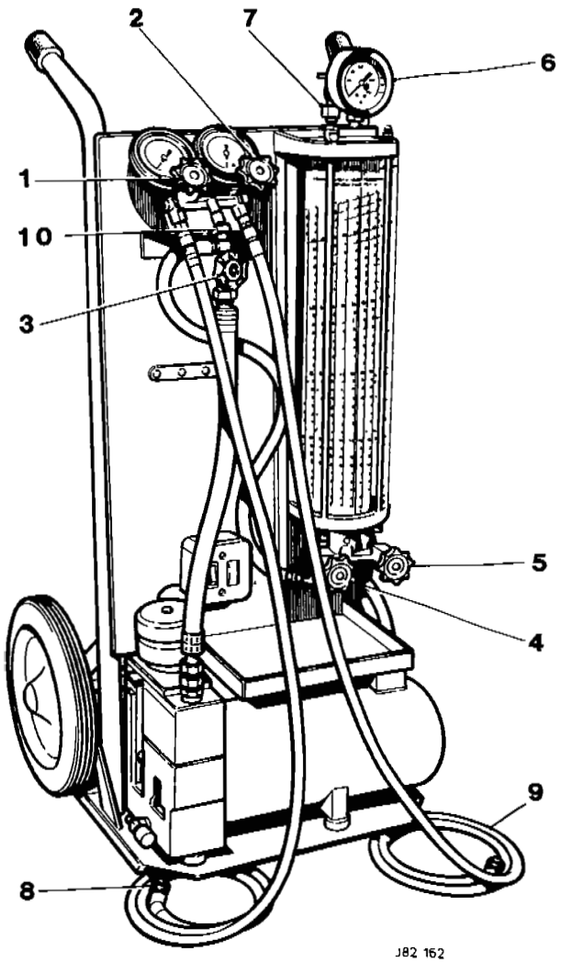


Fig **1**

AIR CONDITIONING

CHARGING 82.30.08

Before attempting the charging operation the system must be evacuated and if necessary flushed through immediately beforehand. No delay between evacuation and charging procedures is permissable. The equipment should be fitted with means of accurately weighing the refrigerant during the charging process.

Great care must be taken to charge correctly, as undercharging will result in very inefficient operation, and overcharging will result in very high pressures and possibly damage to components.

Evacuate the system as described previously.

The supply available in the charge cylinder must be at least 3.3 kg weight.

To fill the charge cylinder the charge cylinder inlet and outlet valves are closed (4 & 5 Fig **1**).

Disconnect the charge cylinder hose from the gauge manifold (10 Fig 1) and connect the charge cylinder hose to a refrigerant **R12** bottle.

Open the bottle **R12** stopcock.

Open the charge cylinder inlet valve (5 fig **1**) and observe the refrigerant in the charging cylinder sight glass.

When the refrigerant stops rising, carefully open the charge cylinder vent valve (7 Fig **1**) to release the pressure and allow the refrigerant level to continue rising until the desired level is achieved.

Close the vent valve (7 Fig **1**) and the charge cylinder inlet valve (5 Fig 1).

Switch on the heater and allow the refrigerant pressure to increase to 830 kPa 8.40 kgf/cm^2 120 lbf/in^2 on the charge cylinder pressure gauge (7 Fig 1).

Switch off the heater.

Rotate the plastic shroud on the refrigerant charge cylinder until the pressure reading corrseponding to the gauge pressure is in line with the refrigerant level. Note that readings must be taken within the R12 band on the shroud.

Close the **R12** stopcock and reconnect the charge cylinder (10 Fig 1) hose to the the gauge manifold.

Ensuring that the vacuum valve fully closed.

Open the charge cylinder valve (4 Fig 1).

As the pressure in the charging cylinder falls, rotate the plastic shroud on the refrigerant cylinder until the pressure reading corresponding to the gauge pressure (6 Fig 1) is in line with the refrigerant level.

When the correct charge has been dispensed.

Close the high and low pressure valves (1 & 2 Fig **1**).

Close the charge cylinder outlet valve (4 Fig **1**).

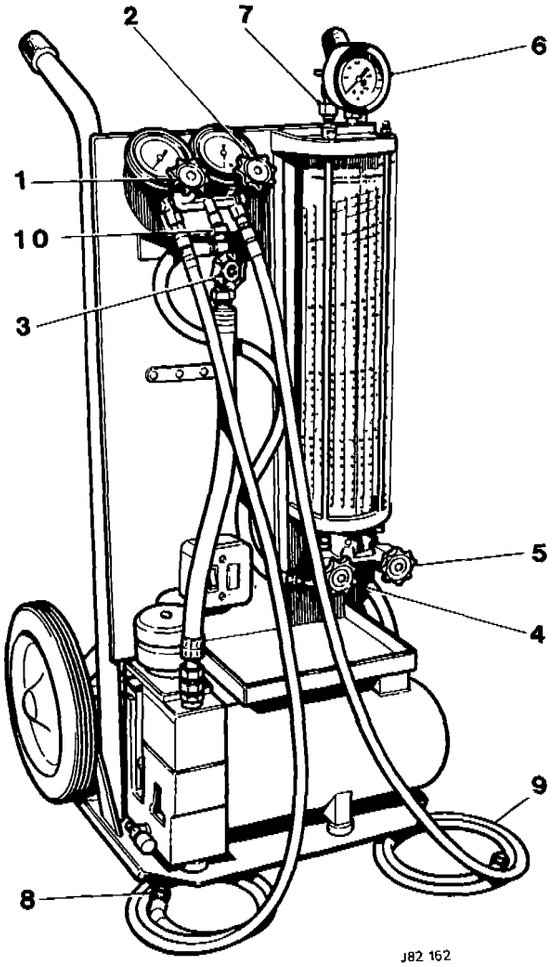


Fig **1**

AIR CONDITIONING

FULL CHARGE NOT ACCEPTED *82.00.00*

If the full charge is not accepted close the high and low pressure valves (1 & 2 Fig 1).
Start the engine and run at 1500 rev/min.
Set the air conditioning controls to maximum cooling and slowly open the low pressure valve (1 Fig 1) to bleed in the remaining refrigerant.

NOTE: This must be carried out Extremely slowly to prevent liquid refrigerant damaging the compressor.
Close the high and low pressure valves (1 & 2 Fig 1).
Close the charge cylinder outlet valve (4 Fig 1).
Switch off the engine.

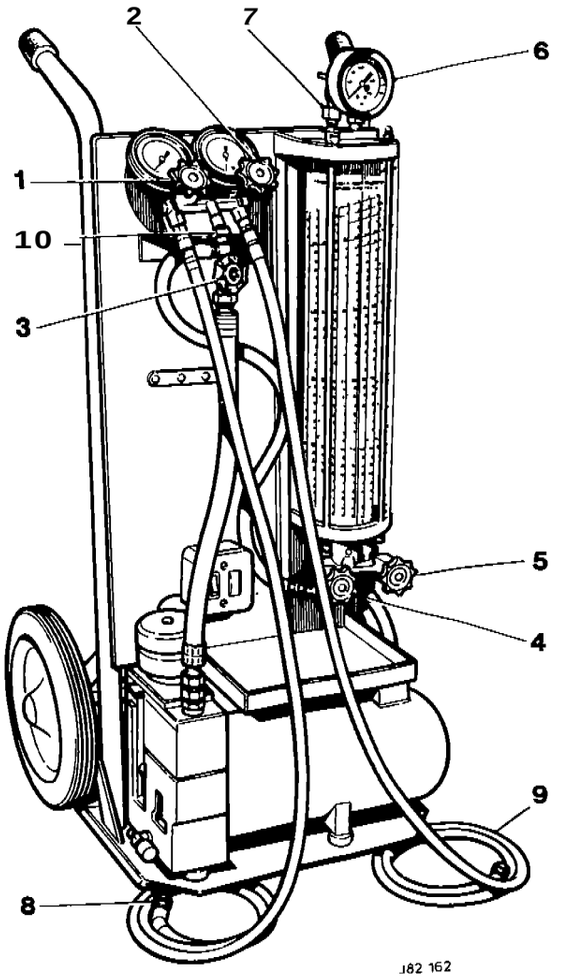


Fig 1

COMPRESSOR.

RENEW ***82.10.20***

Open the bonnet and disconnect the *battery* earth lead.
Depressurize the air conditioning system.
Remove the bolt securing the muffler plate **(1** Fig 1).
Remove the muffler securing **bolt** (2 Fig 1).
Remove the "O" ring seals and discard.
Fit protective caps to the disconnected hoses and a protection plate to the cornpressor.

Release the distributor cap retaining clips and displace the cap with the HT leads over the engine.
Loosen the compressor drive belt trunnion securing bolt **(1** Fig 2) and the adjusting rod pivot bolt (2 Fig 2).
From below slacken the compressor front (3 Fig 2) and rear pivot bolts (3 Fig **1**).
From above, adjust the compressor towards the engine until the drive belt can be removed.
Remove the drive belt trunnion securing nut and bolt **(1** Fig 2).
Disconnect the compressor clutch multi-plug connector (4 Fig 2) and the superheat switch cable **(4** Fig **1**).

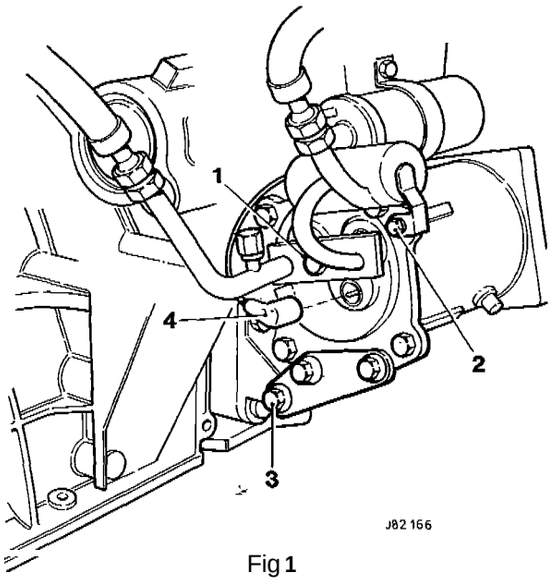


Fig **1**

Remove the bolts securing the exhaust heat shield and remove the shield.
Remove the compressor rear pivot bolt and spacers (3 **Fig** I).
Remove the compressor front pivot bolt (3 Fig 2).
Carefully remove the compressor with the rear end upwards to prevent oil loss.
Remove the bolts securing the support brackets and remove the brackets.
Remove the bolt securing the adjuster rod and remove the rod.

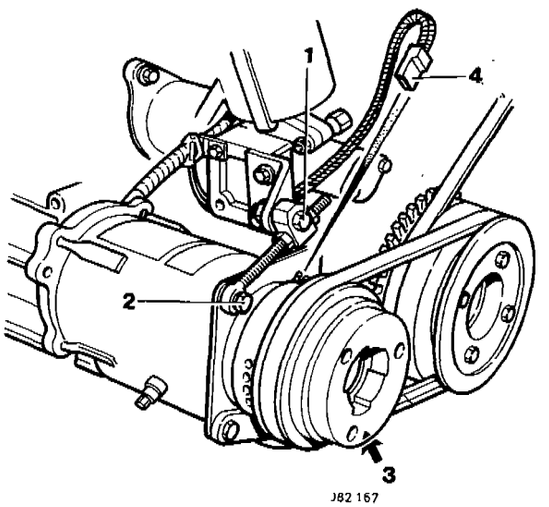


Fig 2

When fitting the new compressor **do** not fully tighten the securing **bolts** until the drive belt is adjusted to the correct belt tension *of* 3.3kg to give deflection of 4.4mm when applied at the mid-point **of** the belt.
Ensure that all the nuts and **bolts** are fully tightened when the belt has been correctly adjusted.
Ensure new "O" ring seals are fitted and the protective caps are not removed until the **last** possible moment before connecting the hoses.
Ensure all hose union nuts are tightened to the correct torque.
Fit new receiver/drier, evacuate and recharge the system.

DATA

TORQUE FIGURES

Muffler bolt ***40-50Nm***
Muffler plate bolt ***32-37Nm***

COMPRESSOR DRIVE BELT

RENEW 82.10.02
ADJUST 82.10.01

Open the bonnet and disconnect the battery earth lead.
Slacken the compressor drive belt trunnion securing bolt (1 Fig 1).
Slacken the upper drive belt adjusting nut (2 Fig 1).
Slacken the adjusting rod pivot bolt (3 Fig 1).
From below slacken the compressor front and rear pivot bolts.
From above adjust the compressor towards the engine.
Displace and remove the drive belt (4 Fig 1).

When fitting the a new drive belt do not fully tighten the compressor securing bolts until the drive belt is adjusted to the correct belt tension of 3.3kg to give deflection of 4.4mm when applied at the mid-point of the belt.

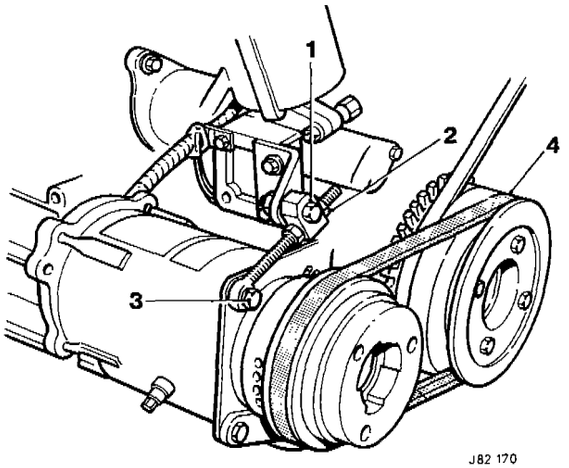


Fig 1

AIR CONDITIONING SUPERHEAT SWITCH

Testing

If the refrigerant level is satisfactory and there is not a blockage in air conditioning system but the thermal fuse persists in melting.
Carry out the following checks.

Test procedure A

For use with a cold engine and at ambient temperatures **below 30°C.**
Connect a test lamp in series with the superheat switch.
Note: With the test lamp connected in the circuit it will prevent the thermal fuse from operating as a safety device therefore great care must be taken when carrying out the test.
Connect a manifold gauge set to the air conditioning system.

Ensure a serviceable thermal fuse is fitted.
With the ignition and the air conditioning switched on.
Depressurize and evacuate the air conditioning system, then close the manifold hand valves (see page).
The test lamp SHOULD NOT LIGHT during this operation.

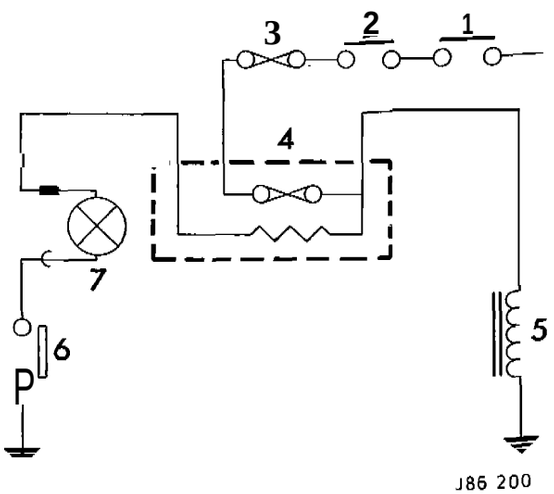


Fig 2

NOTE: If the test lamp does light then follow test procedure **(B).**

Test procedure B

With test lamp not illuminated, connect the centre hose of the manifold gauge set to a refrigerant supply container. Start and run the engine at about 2000 rev/min. After a few minutes the lamp should light. As soon as the test lamp lights, carefully operate the low pressure hand valve to allow refrigerant **to** charge the system. As soon as the air conditioning system becomes charged the lamp should go out.
If the above lamp functions do not occurr, renew the superheat switch.
After checking remove the test lamp **from** the circuit and reconnect the switch lead onto the terminal.
Operate and check the air conditioning system.

SUPERHEAT SWITCH

RENEW **82.10.08**

Open the bonnet and disconnect the **battery** earth lead.
Depressurize the air conditioning system.
Remove the bolt securing the muffler plate to the compressor **(1** Fig **1).**
Remove the bolt securing the muffler **body** assembly to the compressor **(2** Fig **1).**
Remove and discard the "O" ring seals.
Fit protective caps to the compressor and hoses.
Disconnect the superheat switch cable connector (3 Fig **1).**
With suitable circlip pliers remove the circlip retaining the superheat switch and remove the switch.

On fitting new switch, fit new "O" ring seals and receiver/drier.
Ensure **all** hose union nuts are tightened to the correct torque.
Evacuate and recharge the system.

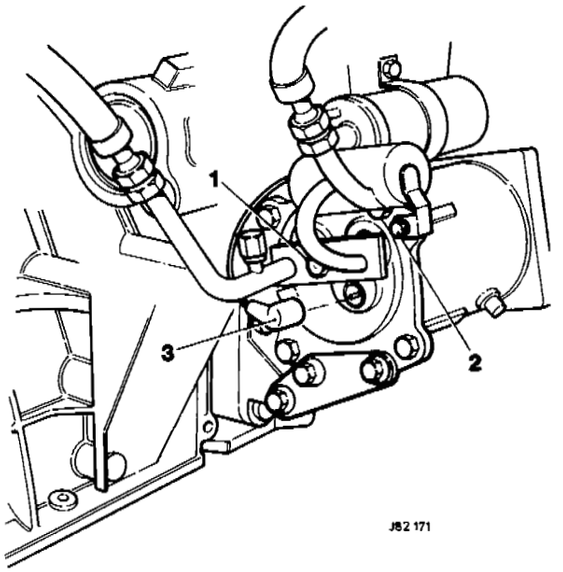


Fig **1**

REAR AIR DISTRIBUTION BOX

RENEW **82.10.33**

Remove the centre console ashtray, glove box and finisher.
Remove the fascia centre veneer panel and ventilator.
Remove the driver and passengers side dash liners.
Remove the screws securing the centre console.
Displace the console rearward and upward.
Displace and remove the air box (Fig 1) from the air tubes.

Fitting a new air distribution box is the reversal of the above procedure.

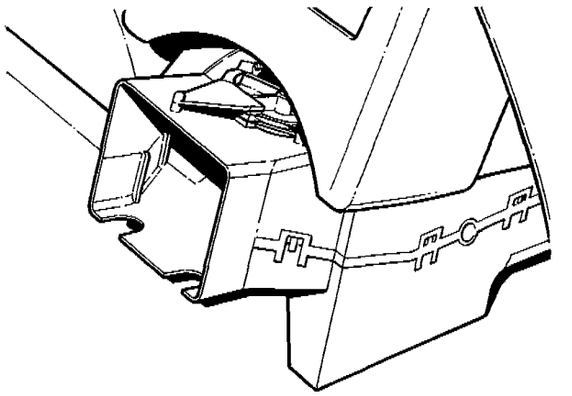


Fig 1

CONDENSER

RENEW **82.15.07**

Depressurize the air conditioning system.
Remove the clips securing the fan cowl.
Remove the bolts securing the radiator cross member and remove the cross member complete with the mounting rubbers.
With the aid of a backing spanner undo the union nut and disconnect the compressor hose from the condenser.
Remove and discard the "O" ring seal.
Fit a protective cap to the hose.
Undo the condenser to receiver/drier union nut.
Disconnect the condenser from the receiver/drier, remove and discard the "O" ring seal.
Fit a protective cap to the receiver/drier.
Remove the nuts securing the receiver/drier and displace the receiver/drier for access.
Remove the condenser complete (Fig 2) with the rubber mounting grommets.

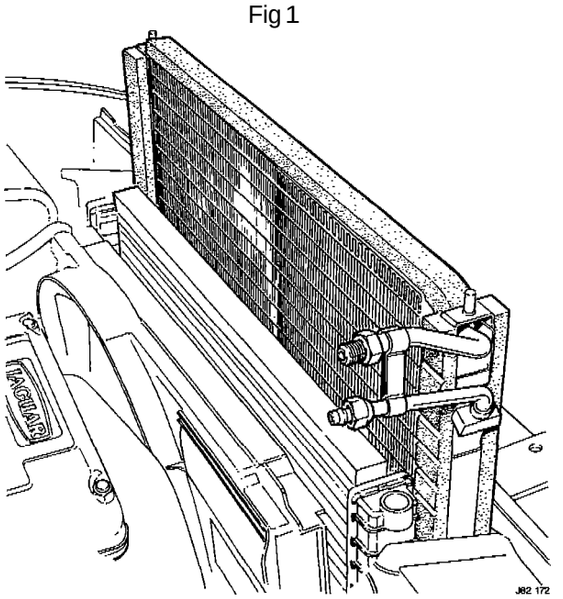


Fig 2

On fitting the new condenser, stick rubber foam to the top and sides.
Fit new mounting grommets and ensure the condenser is fully seated in the correct position.
Ensure all hose union nuts are tightened to the correct torque.
Flush the system, fit new receiver/drier, evacuate and recharge the system.

DATA

TORQUE FIGURES

Condensor** hose 3/4UNF **20-27Nm
Condensor** hose 7/8UNF **28-37Nm
Drier** to condenser **15-17Nm

DRIER BOTTLE

RENEW **82.17.01**

Depressurize the air conditioning system.
Undo the union nut and disconnect the expansion valve hose from the drier bottle (1 .Fig 1).
Remove and discard the "O" ring seal.
Fit a protective cap to the hose.
Remove the nuts washers securing the drier bottle (2 Fig 1).
With the aid of a backing spanner undo the condenser pipe union nut (3 Fig 1).
Disconnect the drier bottle from the condenser.
Remove, discard the "O" ring seal and fit a protective cap to the condenser outlet.
Remove the drier bottle.

On fitting new drier bottle ensure new "O" rings are fitted.
Ensure the union nuts are tightened to the correct torque
Flush, evacuate and recharge the system.

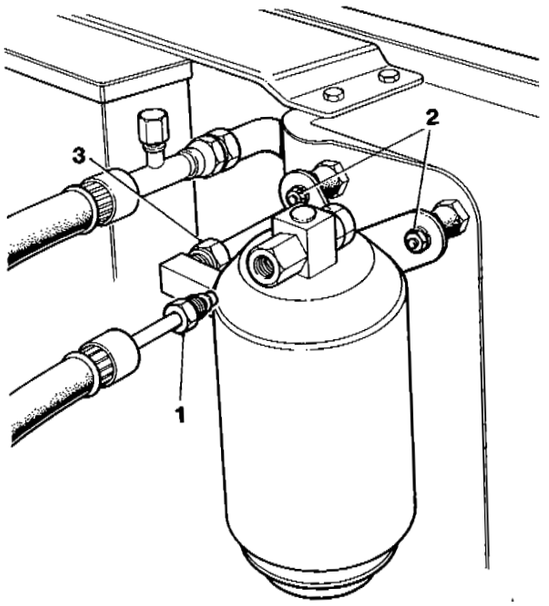


Fig 1

DATA

TORQUE FIGURES

Drier securing nuts 7-10Nm

0206G

LOWER FEEDBACK POTENTIOMETER

RENEW ***82.20.60***

NOTE: The potentiometer is supplied preset on a mounting plate and must not be disturbed.
Open the bonnet and disconnect the battery earth lead.
Remove the left hand dash liner.
Remove the three screws (Fig 2) securing the potentiometer plate.

Disconnect the cable connector.
Withdraw the potentiometer complete with plate from its location.

Fitting a new potentiometer assembly is the reversal of the removal procedure.

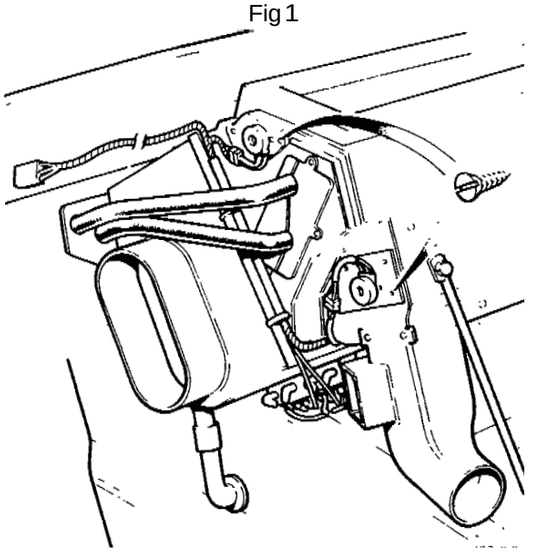


Fig 2

UPPER FEEDBACK POTENTIOMETER

RENEW **82.20.61**

NOTE: The potentiometer is supplied preset on the mounting plate and must not be disturbed.
Open the bonnet and disconnect the battery earth lead.
Remove the left hand dash liner.
If the vehicle is right hand drive remove the glove **box.**
Remove the three screws (Fig **1**) securing potentiometer fixing plate.

Disconnect the cable connector.
Withdraw the potentiometer complete with plate **from** its location.
Fitting **a** new potentiometer is the reversal of the removal procedure.

0206G

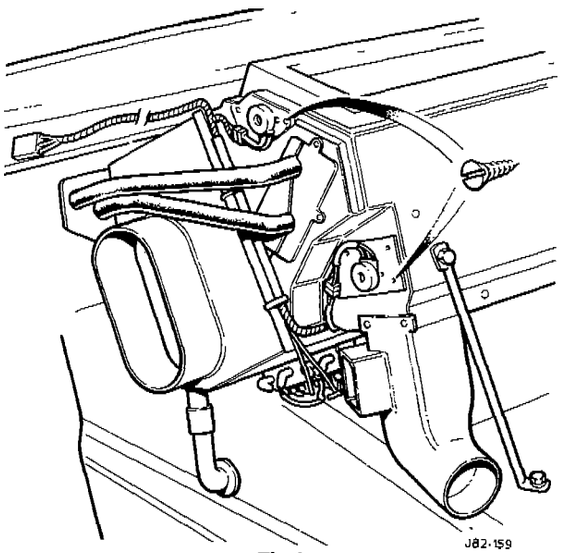


Fig 1

IN CAR TEMPERATURE SENSOR.

RENEW **82.20.03**

Open the bonnet and disconnect the battery earth lead.
Open the glove **box** and remove the plate from inside the glove **box.**
Disconnect the temperature sensor cable harness **multi**-plug connector (1 **Fig** 2).
Disconnect the rubber tube from the sensor assembly (2 Fig 2).
Remove the screws securing the sensor assembly and remove the assembly (3 Fig 2).

Remove the screws securing the sensor to the sensor housing and remove the sensor.

Fitting a new sensor is the reversal of the above procedure.

0206G

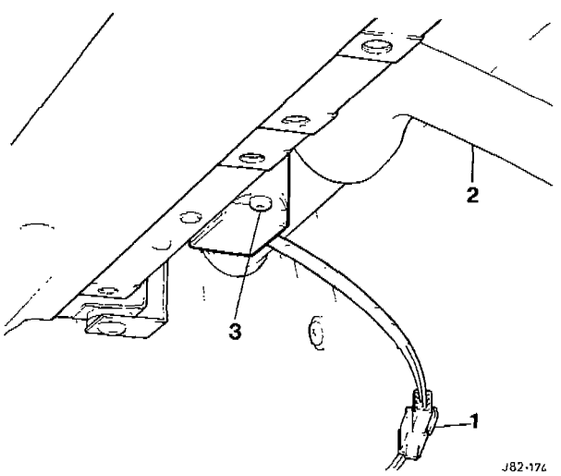


Fig 2

AMBIENT TEMPERATURE SENSOR

RENEW ***82.20.02***

Open the bonnet and disconnect the battery earth lead.
Remove the drivers side dash liner.
Displace the pliable trunking from the air conditioning unit.
Remove the bolts securing the blower motor assembly.
.Disconnect the multi-plug cable harness connectors.
On right hand drive vehicles disconnect the in-car sensor hose from the pliable trunking.
Disconnect the vacuum hose from the blower motor assembly servo unit.
Displace and remove the blower motor assembly.
Remove the two screws securing the ambient sensor and remove the sensor.
On left hand drive vehicles the sensor is accessible through the removable plate in the glove box (1 Fig 1).

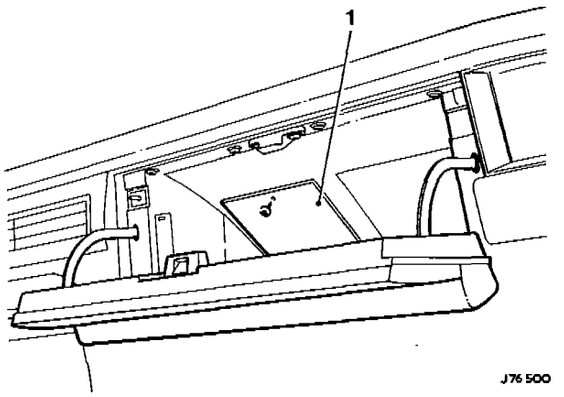


Fig 1

Fitting a new sensor is the reversal of the removal procedure.

0206G

BLOWER MOTOR ASSEMBLY (Right hand side)

RENEW 82.25.14

Open the bonnet and disconnect the battery earth lead.
Remove the right hand side dash liner (Fig 2).

If the vehicle is left hand drive remove the glove box and lid.
Remove the lower screw securing the central processor, displace the earth lead and remove the spacers.
Loosen the upper screw securing the processor, raise and disengage the processor from the securing screw.
Displace the processor downwards for access.
Remove the screws securing the processor mounting bracket and remove the bracket.
Displace the pliable trunking from the air conditioning unit.
Remove the bolts securing the blower motor assembly.
Disconnect the multi-plug cable harness connectors.
Disconnect the in-car sensor hose from the pliable trunking.
Disconnect the vacuum hose from the blower motor assembly servo unit.
Displace and remove the blower motor assembly.

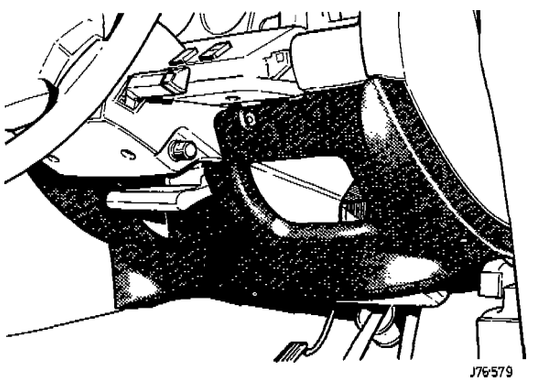


Fig 2

Disconnect the ambient temperature sensor.
Remove the rubber gasket from the assembly.
Remove the tape securing the trunking to the blower motor assembly and remove the trunking.

Fitting a new blower motor assembly is the reversal of the above procedure.

0206G

BLOWER MOTOR ASSEMBLY (Left hand side)

RENEW **82.25.13**

Open the bonnet and disconnect the battery earth lead.
Remove the left hand side dash liner.
If the vehicle is right hand drive remove the glove box and lid.
Remove the lower screw securing the central processor, displace the earth lead and remove the spacers.
Loosen the upper screw securing the processor, raise and disengage the processor from the securing screw.
Displace the processor downwards for access.
Remove the screws securing the processor mounting bracket and remove the bracket.
Remove the screws securing the blower motor assembly.
Disconnect the multi-plug cable connectors.
Disconnect the vacuum hose from the blower motor assembly servo unit.
Disconnect the pliable trunking from the air conditioning unit.
Displace and remove the blower motor assembly (Fig 1).

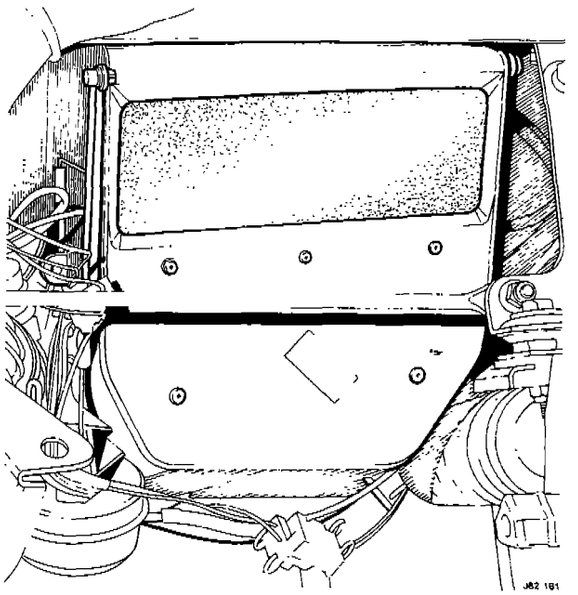


Fig 1

Remove the rubber gasket from the assembly.
If the vehicle is left hand drive remove the screws securing the ambient temperature sensor and remove the sensor.

Fitting a new blower motor assembly is the reversal of the above procedure.

0206G

SOLAR SENSOR

RENEW **82.20.20**

Open the bonnet and disconnect the battery earth lead.
Carefully prise the solar sensor panel from the top of the fascia (1 Fig 1).
Disconnect the multi-pin cable harness connector.
Remove the complete solar sensor assembly (2 Fig 1).
Remove the spire clips (3 Fig **1)** securing the sensor **to** the assembly and remove the sensor (4 Fig **1).**

Fitting a new sensor and spire clips is the reversal of the above procedure.

0206G

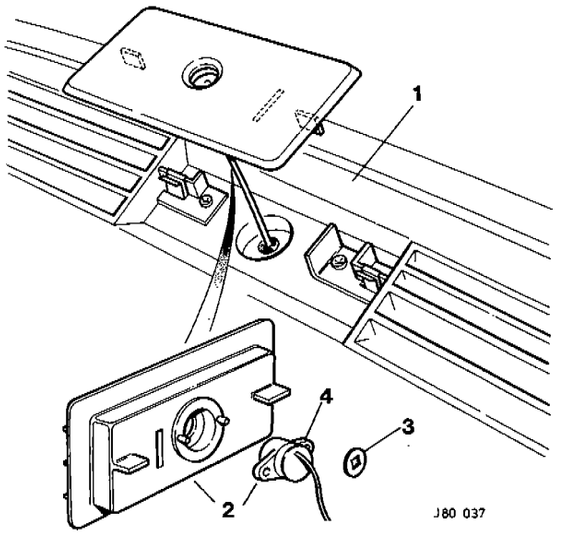


Fig **1**

WATER VALVE

RENEW **82.20.33**

Open the bonnet and drain the engine coolant into a suitable container.
Disconnect the water valve vacuum pipe **(1** Fig 2).
Loosen the heater hose securing clip and remove the hose **from** the heater matrix pipe (2 **Fig** 2).
Reposition the water valve for access.
Loosen the heater to water valve hose clip and remove the hose assembly.
Loosen the water valve to cylinder head hose clip (3 Fig 2) and remove the water valve assembly (4 Fig 2).

Fit the new water valve assembly **in** the reverse order to the above procedure.
Refil the engine with coolant.

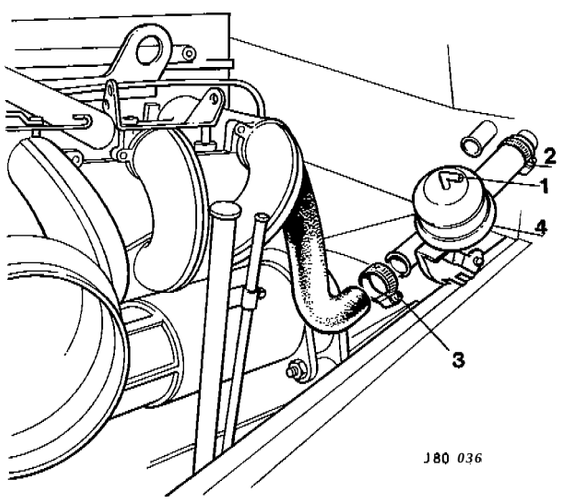


Fig 2

VENTILATOR OUTLETS (Right or left hand).

RENEW **82.20.39**
82.20.40

Open the car door.
Carefully prise the appropriate ventilator outlet direction vent from the housing.
Release the housing retaining clips and remove the ventilator from the fascia (Fig **1**).

To fit the new ventilator reverse the above procedure.

0206G

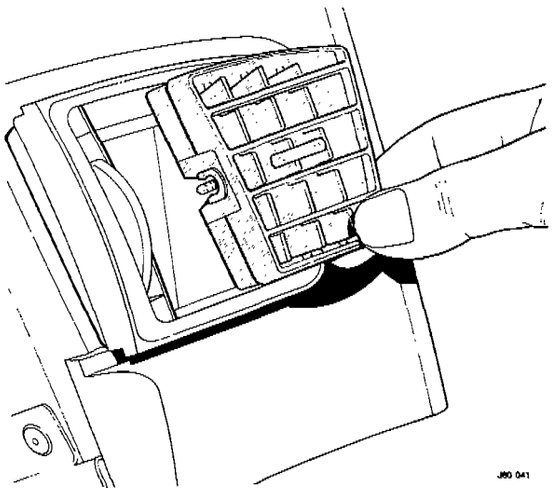


Fig 1

VENTILATOR CENTRE FLAP SERVO

RENEW **82.20.41**

Open the bonnet and disconnect the battery earth lead.
Open the car door and remove the steering wheel.
Remove the dash liners.
Remove the screws securing the instrument pack.
Disconnect the instrument pack cable harness multi-plug connectors and remove the pack assembly.
Remove the glove **box.**
Remove the centre fascia veneer panel and the centre ventilator.
Remove the fascia board assembly.
Disconnect the vacuum hose from the solenoid and reposition the vent assembly from the fascia assembly.
Remove the spire clips and rubber sealing strips.
Remove the servo (Fig 2) and place aside.

Reverse the above procedure when fitting the new servo.

0206G

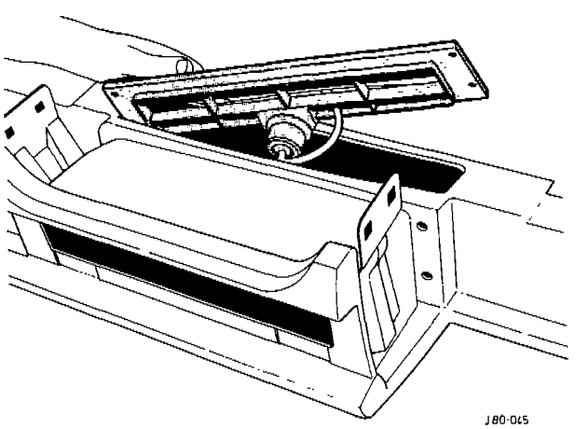


Fig **2**

DEMISTER FLAP SERVO

RENEW **82.20.42**

Open the bonnet and disconnect the battery earth lead.
Open the car door and remove the steering wheel.
Remove the screws securing the dash liners and remove the dash liners.
Remove the screws securing the instrument pack.
Disconnect the instrument pack cable harness multi-plug connectors and remove the pack assembly.
Remove the centre veneer panel and the centre ventilator.
Remove the fascia board assembly. Remove and disconnect the solar sensor.
Remove the fascia ventilator grille trim panel.
Remove the screws securing the defrost vent.
Reposition the fascia for access and disconnect the solenoid vacuum tube.
Remove the vent assembly.
Remove the spire clips securing the servo and remove the servo **(Fig** 1).

Reverse the above procedure when fitting the new servo.

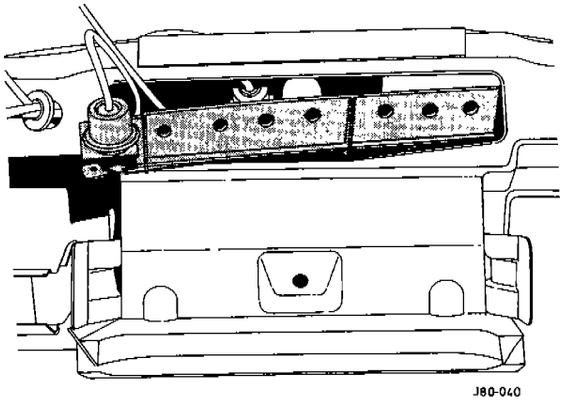


Fig 1

0206G

FLAP MOTOR /GEARBOX ASSEMBLY (Upper)

RENEW ***82.20.62***

Open the bonnet and disconnect the battery earth lead.
Remove the glove box on left hand drive cars and displace the relay mounting bracket.
Remove the right hand side dash liner.
Remove the screws securing the electronic control module (1 Fig 1) to the air conditioning unit and reposition the module to one side for access.
Remove the screws securing the flap motor assembly, displace the assembly and disconnect the multi-plug connector.
Remove the flap motor assembly (2 Fig 1).

Fitting a new assembly is the reversal of the above procedure.

0206G

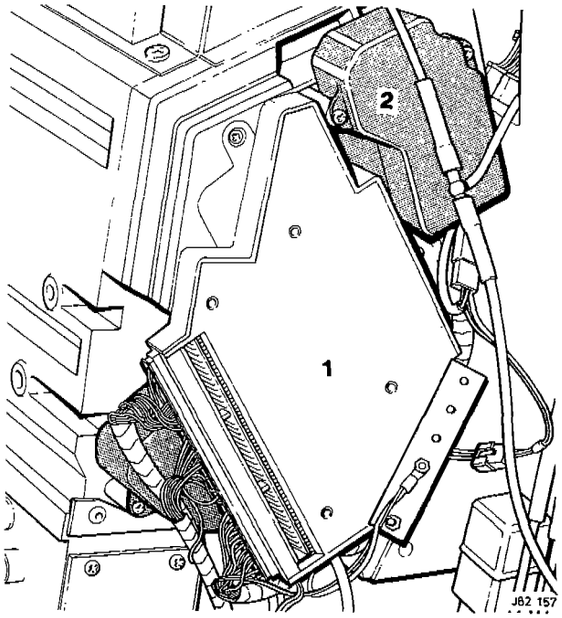


Fig 1

FLAP MOTOR/GEARBOX ASSEMBLY (Lower)

RENEW **82.20.63**

Open the bonnet and disconnect the battery earth lead.
On left hand drive cars, remove the glove box and relay mounting bracket.
Remove the left hand side dash liner.
Remove the screws sucuring the electronic control module (1 Fig 2) to the air conditioning unit and reposition the module for access.
Remove the screws securing lower motor assembly, displace the assembly and disconnect the multi-plug connector.
Remove the flap motor assembly.

Fitting a new assembly is the reversal of the above procedure.

0206G

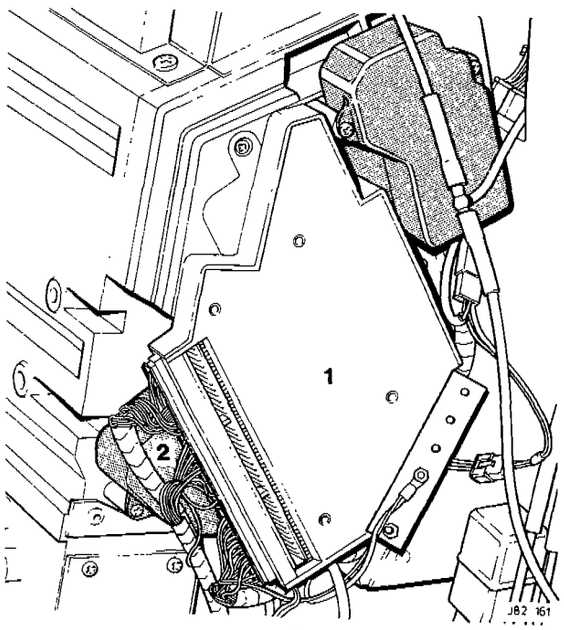


Fig 2

ELECTRONIC CONTROL MODULE (E.C.M.)

RENEW ***82.20.65***

Open the bonnet and disconnect the battery earth lead.
Open the car door and remove the right hand dash liner.
On left hand drive vehicles remove the glove box assembly.
Remove the screws securing the control module and displace the module from its location.
Disconnect the earth lead and the multi-plug harness connectors.
Remove the module (Fig **1**).

Fitting **a** new module is the reversal **of** the above procedure.
Ensure that all connection are secure and clean.

0206G

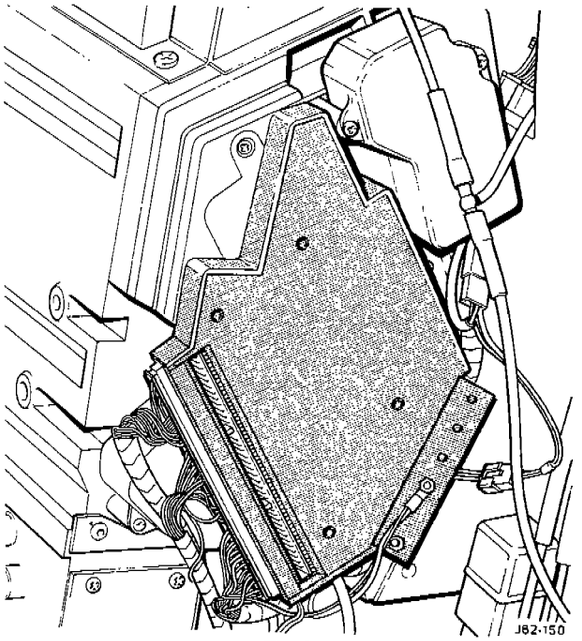


Fig 1

WATER TEMPERATURE SWITCH

RENEW **82.20.71**

Open the bonnet and disconnect the battery earth lead.
Open the car door and remove the left hand side dash liner.
Note and disconnect the switch supply cables.
Remove the screws securing the switch and remove the switch (Fig 2).

Fitting a new switch is the reversal **of** the above procedure ensuring all connection are secure and clean.

0206G

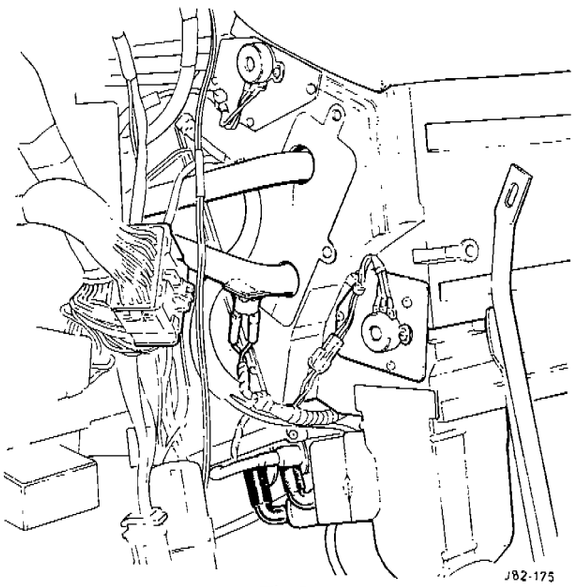


Fig 2

SWITCH CONTROL MODULE

RENEW ***82.20.72***

Open the bonnet and disconnect the battery earth lead.
Open the car door and remove the centre console ashtray.
Remove the centre console finisher.
Remove the screws securing the radio console and remove the console.
Loosen the screws securing the switch control module.
Displace the control module and disconnect the cable harness multi-plug connector.
Remove the switch module from the console (Fig 1).

Fitting a new switch control module is the reversal of the above procedure

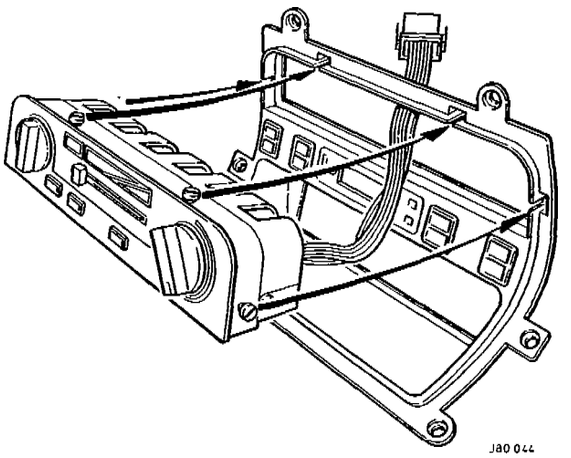


Fig 1

SWITCH CONTROL MODULE ILLUMINATION BULB

RENEW **86.46.07**

Open the.bonnet and disconnect the battery earth lead.
Open the car door and remove the centre console ashtray.
Remove the centre console finisher.
Remove the screws securing the radio console and remove the console.
Loosen the screws securing the switch control module.
Displace the control module and disconnect the cable harness multi-plug connector.
Remove the switch module from the console (Fig 1).
Prise the face level knob from its lever.
Remove the control knobs.
Remove the fascia plate retaining nuts and the screws securing the control panel.
Remove the fascia plate and the lens.
Remove the appropriate bulb.

Fitting a new bulb is the reversal of the above procedure.

0206G

EXPANSION VALVE

RENEW 82.25.01

Depressurize the air conditioning system.
On left-hand drive vehicles remove the battery for access.
Remove the clamp securing the receiver/drier to expansion valve pipe.
Undo the top pipe union nut and disconnect the pipe from the expansion valve (1 Fig 1).
Fit a protective cap to the pipe.
Undo the lower hose union nut and disconnect the hose from the expansion valve (2 Fig 1).
Fit a protective cap to the hose.
Remove the "O" ring seals and discard.
Undo the union nuts on the evaporator stub pipes (3 Fig 1).
Remove the expansion valve, remove and discard the "O" ring seals.
Fit protective caps to the evaporator stub pipes.

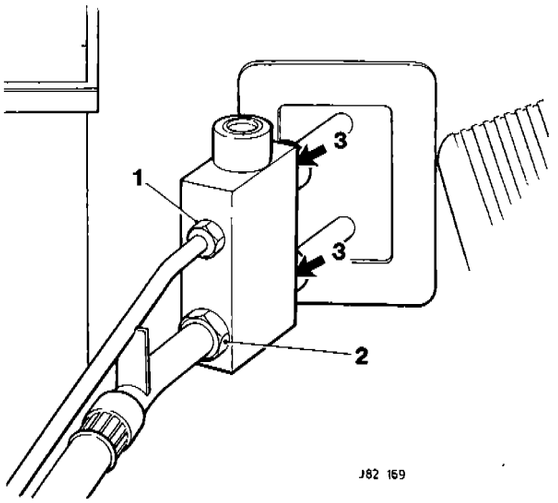


Fig 1

On fitting new expansion valve ensure new "O" rings are fitted.
Ensure the union nuts are tightened to the correct torque as detailed below.
Flush the system, fit new receiver/drier, evacuate and recharge the system.

DATA

TORQUE FIGURES

Evaporator stub pipe union 3/4UNC 20-27Nm
Evaporator stub pipe union 7/8UNC 28-37Nm

0206G

EVAPORATOR TO COMPRESSOR HOSE

RENEW **82.25.02**

NOTE: It is essential that a second backing spanner is always used when loosening or tightening **all** hose joints. This will rninirnise distortion or strain on pipes.
Before renewing any hose or component ensure that suitable clean, dry, sealing plugs are to hand.
The protective sealing plugs or caps must remain on all replacement components until immediately before making connection.
The drier bottle must be renewed whenever the system has been opened.

Depressurize the air conditioning system.
If the vehicle is left hand drive remove the battery.
Undo the union nut securing the lower hose to the expansion valve and disconnect the hose (1 Fig 1).
Fit a protective cap to the expansion valve orifice.
Remove and discard the "O" ring seal.
Undo the union nut connecting the evaporator hose to the compressor inlet pipe and disconnect the hose (2 Fig 1).
Remove and discard the "O" seal.
Fit a protective cap the compressor inlet pipe.

Fitting a new hose is the reversal of the above procedure.
Ensure that new "O" rigs are fitted and the protective caps are not removed until the last possible moment before the new hose is connected.
Ensure the union nuts are tightened to the correct torque.
Flush the system, fit new drier bottle, evacuate and recharge the system.

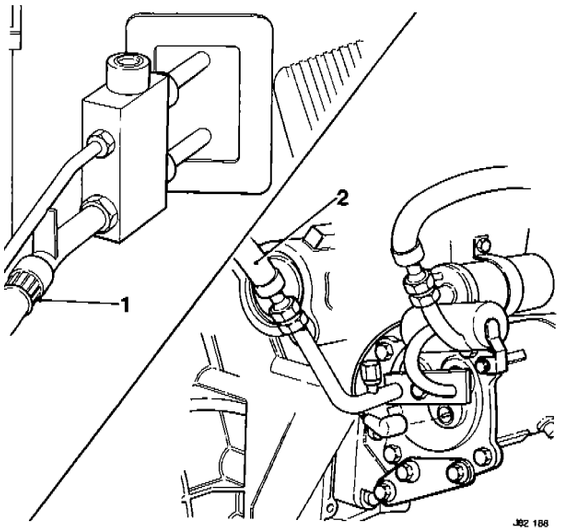


Fig 1

DATA

TORQUE FIGURES

Hose union-evaporator 28-37Mm
Hose union-condenser 28-37Nm

0206G

DRIER BOTTLE TO EVAPORATOR HOSE

RENEW **82.25.03**

Depressurize the air conditioning system.
Undo the union nut and disconnect the hose from the drier bottle (1 Fig 1).
Remove and discard the "O" ring seal.
Fit protective caps to the hose and to the drier bottle.
Remove the screw securing the pipe clip to the inner wing valance and remove the clip.
Undo the upper union nut from the expansion valve and disconnect the pipe (2 Fig 1).
Remove and discard the "O" ring seal.
Fit a protective cap to the expansion valve and remove pipe.

Fitting a new hose is the reversal of the above procedure.
Ensure that new "O" rings are fitted and the protective caps are not removed until the last possible moment before connecting the new hose.
Ensure the union nuts are tightened to the correct torque.
Flush the system, fit new receiver/drier, evacuate and recharge the system.

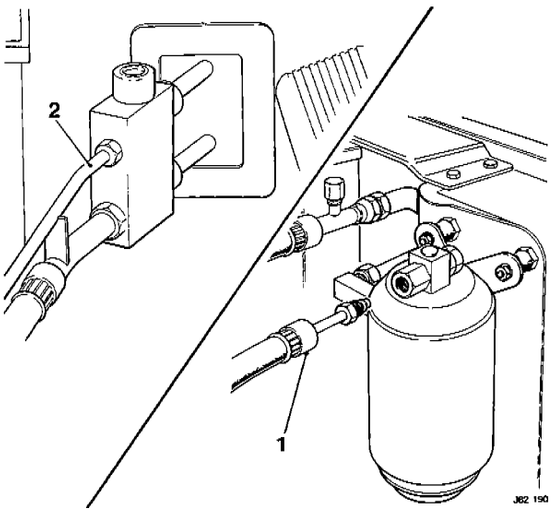


Fig 1

DATA

TORQUE FIGURES

Hose union-drier 15-17Nm
Hose ***union-evaporator 15-17Nm***
Pipe ***clip 7-10Nm***

0206G

COMPRESSOR TO CONDENSER HOSE

RENEW **82.25.49**

Depressurize the air conditioning system.
Undo the union nut from the condenser stub pipe and remove the hose.
Remove and discard the "O" ring seal.
Fit a protective cap to the condenser outlet.
Undo the union nut connecting the hose to the muffler and disconnect the hose.
Remove and discard the "O" ring seal.
Fit a protective cap to the muffler outlet pipe and remove the hose (Fig 2).

Fitting a new hose is the reversal of the above procedure.

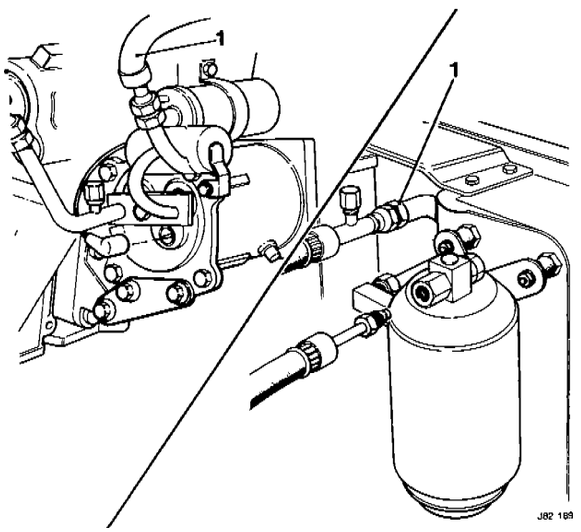


Fig 2

Ensure that new "O" rings are fitted and the protective caps are not removed until the last possible moment before connecting the new hose.
Ensure the union nuts are tightened to the correct torque.
Flush the system, fit new drier bottle. Evacuate and recharge the system.

DATA

TORQUE FIGURES

Hose union - drier ***15-17Nm***
Pipe clip ***7-10Nm***

0206G

HEATER MATRIX

RENEW **82.25.19**

Open the bonnet, ensure the engine is cold, drain the engine coolant into a suitable container.
Disconnect the battery earth lead.
Open the car door and remove the dash liners and the steering wheel.
Remove the screws securing the instrument pack.
Disconnect the instrument pack cable harness multi-plug connectors and remove the **pack** assembly.
Remove the glove box and the glove **box** lid.
Remove the screws securing the heater matrix pipe housing and remove the pipe housing halves.
Remove the foam pad from the pipes.
Remove the screws securing the pipes, reposition the pipes and remove the pipe gaskets.
Remove the screws securing the electronic control module and reposition the module for access to the screws securing the matrix housing.
Remove the screws securing the heater matrix housing and remove the housing.
Displace and remove the matrix **(Fig 1**).
Remove the foam strip from the matrix.

Fitting the new matrix is the reversal of the above procedure.
Ensure all electrical connection are clean and secure.
Refill the engine cooling system with specified coolant.

0206G

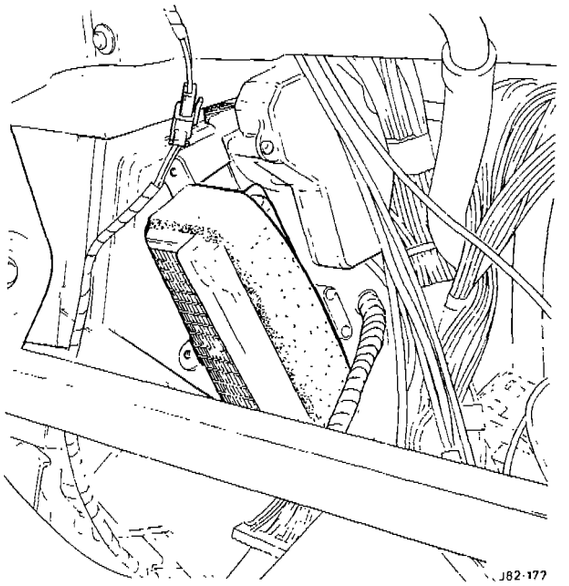


Fig **1**

HEATER/COOLER UNIT EVAPORATOR

RENEW **82.25.20**
82.25.21

Open the bonnet and disconnect the battery earth lead.
Depressurize the air conditioning system.
Partially drain the engine coolant into a suitable container.
Open the car door.
Remove the right and left hand dash liners.
Remove the steering wheel.
Remove the instrument module and control panel assembly.
Remove the glove box lid.
Remove the right and left hand fascia end panels.
Remove the centre veneer panel and ventilator.
Remove the centre console finisher, ashtray, radio console, rear ventilator outlet and glove box.
Remove the centre console assembly.
Remove the fascia assembly.
On left hand drive cars remove the battery.
Disconnect the evaporator pipes from the expansion valve.
Remove and discard "O" ring seals.
Fit protective caps to the expansion valve outlets and to the disconnected pipes.
Disconnect the coolant hoses from the heater matrix inlet and outlet pipes.
From the engine compartment remove the nuts securing the air conditioning unit.
Loosen the upper screw securing the central processor unit and remove the lower screw.
Displace the earth lead, lift and disengage the central processor from its mounting bracket.
Remove the screw securing the mounting bracket and remove the bracket complete with spacers.
Displace the pliable trunking from the air conditioning unit.
Remove the nut and bolt securing the evaporator outlet pipe guide to the bulkhead.
Disconnect the condensate drain tubes.
Disconnect the recirculation vent vacuum tubes at the left hand "T" piece and re-route to one side for access.
Disconnect the left and right hand blower motor cable harness multi-plug connectors.
Note and disconnect the vacuum hoses.
Disconnect the air conditioning unit main harness multi-plug connector.
Disconnect the left hand blower motor pliable trunking.
Remove the bolts securing the air conditioning unit support bracket and remove the bracket.
Displace and remove the air conditioning unit (Fig 1).

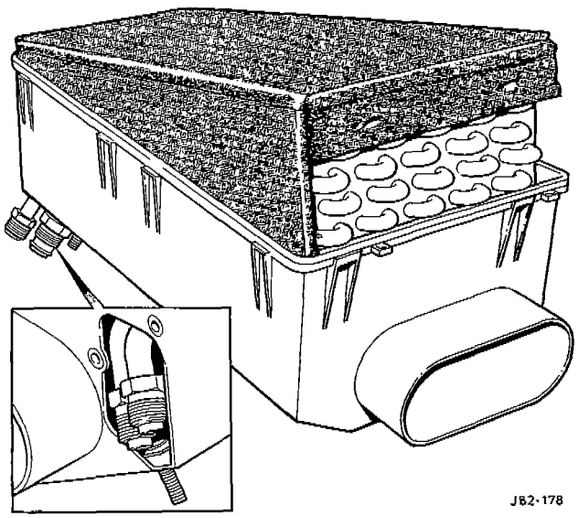


Fig 1

With the unit face down on a workbench cut and remove the cable harness securing straps.
Remove the screws securing the evaporator temperature sensor and carefully remove the sensor.
Remove the right and left hand vacuum solenoid assemblies.
Remove the screws securing the earth lead and displace the lead for access.
Remove the screws securing the heater matrix pipes guide plate and remove the plate.
Remove the clips securing the evaporator housing assembly and carefully remove the evaporator assembly (Fig 1).

Remove the foam pad from the evaporator outlet pipes.
Remove the evaporator pipe bracket.
Remove the screws securing the evaporator to the casing and carefully remove the casing.
Clean the sealant from the casing.

Fitting new evaporator or a new heater/cooler assembly is the reversal of the above procedure.
Ensure all the electrical connections are clean and tight.
Ensure the union nuts on the air conditioning pipes are tightened to the correct torque.
Flush and fit a new receiver/drier. Evacuate and recharge the system.
Refill the cooling system with coolant.

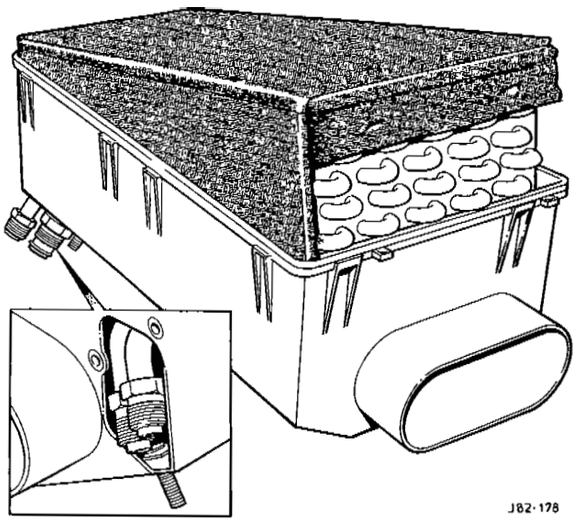


Fig 1

DEFROST/DE MIST VACUUM SOLENOID

RENEW **82.25.45**

Open the bonnet and disconnect the battery earth lead.
Open the car door, remove the right hand side dash liner and the footwell outlet duct.
Remove the two screws securing the solenoid mounting panel and displace the panel for access.
Note then disconnect the vacuum hoses and the supply cables.
Remove the solenoid assembly (Fig 2).

Remove the vacuum elbow tube and the green vacuum tube.
Release the solenoid mounting clip and remove the solenoid.
Fitting new solenoids is the reversal of the removal procedure.

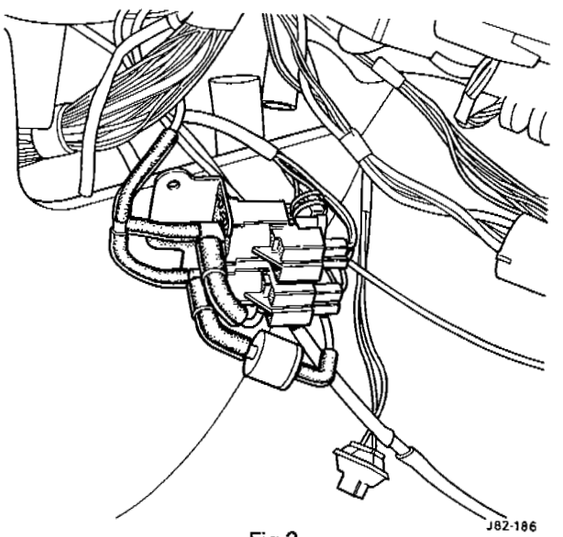


Fig 2

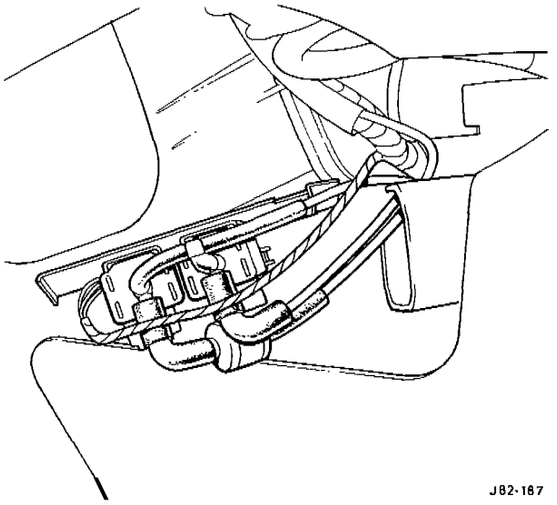
0206G

CENTRE VENT VACUUM SOLENOID

RENEW **82.25.46**

Open the bonnet and disconnect the battery earth lead.
Open the car door and remove the right hand side dash liner and the footwell outlet duct.
Remove the two screws securing the solenoid mounting panel and displace the panel for access.
Note then disconnect the vacuum hoses and supply cables.
Remove the solenoid assembly.
Remove the vacuum elbow tube and the black vacuum tube.
Release the solenoid mounting clips and remove the centre vent solenoid.
Fitting new solenoid is the reversal **of** the removal procedure.

0206G



J82-187

Fig **1**

RECIRCULATION/FRESH AIR VACUUM SOLENOID

RENEW **82.25.47**

Open the bonnet and disconnect the battery earth lead.
Qpen the car door and remove the left hand side dash liner and the footwell outlet duct.
Remove the screws securing the solenoid mounting panel and displace the panel for access.
Note then disconnect the vacuum hoses and the supply cables.
Remove the vacuum solenoid assembly (Fig **1**).
Remove the screw securing the solenoid to the mounting plate.
Disconnect the blue vacuum hose and remove the solenoid.

Fitting a new solenoid is the reversal **of** the removal procedure.

0206G

WATER VALVE VACUUM SOLENOID

RENEW ***82.25.48***

Open the bonnet and disconnect the battery earth lead.
Open the car door, remove the left hand side dash liner and the footwell outlet duct.
Remove the screws securing the solenoid mounting panel and reposition the panel for access.
Note then disconnect the vacuum hose and supply cables.
Remove the screws securing the solenoid mounting plate.
Disconnect the red vacuum hose and remove the solenoid.

Fitting new solenoid **is** the reversal of the removal procedure.

EVAPORATOR TEMPERATURE SENSOR

RENEW **82.20.64**

Open the bonnet and disconnect the battery earth lead.
Remove the right hand dash liner.
Displace the wiring harness for access.
Remove the screws securing the sensor.
Disconnect the sensor multi-plug connector.
Carefully withdraw the sensor from its location (Fig 1).
Remove and discard the gasket.

On fitting new sensor ensure a new gasket is fitted.
Carefully, with the aid of service tool No JD 122 insert the sensor probe into the evaporator.

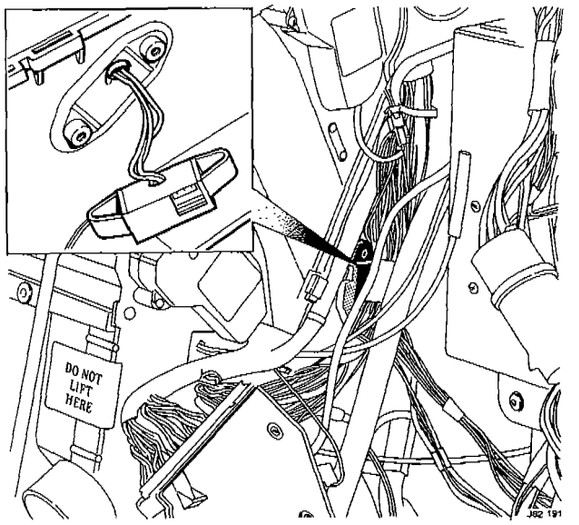


Fig 1

DATA

SERVICE TOOL

Installer Air Conditioning Sensor JD 122

0206G

CHARGING VALVE CORE

RENEW **82.30.12**

A possible reason for leakage of refrigerant from the system may be a damaged or bent schraeder valve. To ensure that the valve core is the cause of leakage use soap solution, if the valve core is leaking replace it by the following procedure. Ensure replacement clean dry valve is to hand before commencing the operation.
Depressurize the system, with a schraeder valve removing tool remove the valve core (Fig 2).

NOTE: When fitting a new valve core ensure it is not overtightened.
Evacuate and recharge the system.

0206G

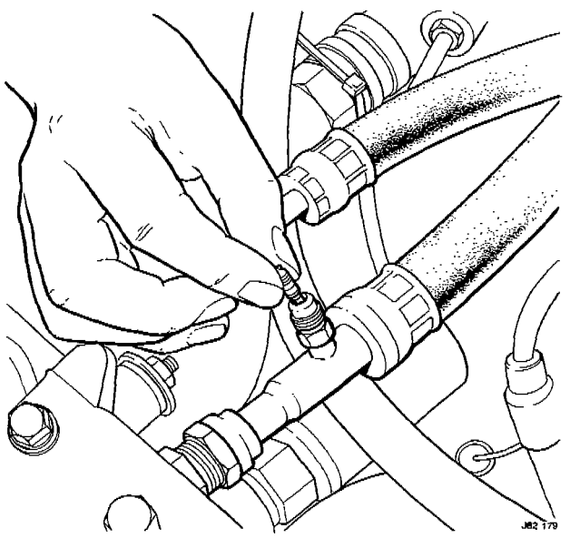


Fig 2

COMPRESSOR

OIL CHECK 82.00.00

Whenever a component has been replaced in the refrigerant system or there is an obvious oil leak, the following procedures should be carried out.

1 Determine the angle the compressor is mounted.

2 Remove the oil filler plug. look through the oil filler plug hole and rotate the clutch front plate to position the internal components as shown in Fig 1.
Centre the components as they are moving to the rear of the compressor (the discharge stroke). This is necessary to allow the dipstick to penetrate fully.

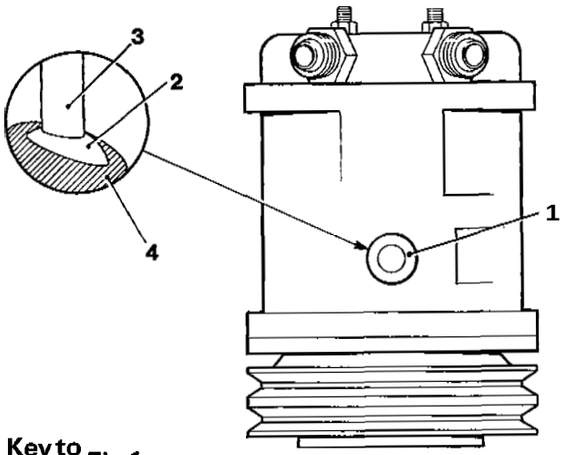
3 Insert the dipstick to its stop position (the stop is the angle near the top of the dipstick 3 fig 2). The point of the angle must be towards the engine with the bottom surface of the angle flush with surface of the filler hole (fig 2).

4 See chart below for correct oil level for the mounting angle of the compressor.

5 If the increment indication on the dipstick do not match the table, add or subtract oil to the mid point value.

6 Refit the oil filler plug checking that the "O" ring seal is not twisted. Ensure "O" ring seal and the seat are clean.
Torque the plug to 6 – 9 ft/lbs (0.8 – 1.2 kg/m. Do not over tighten the plug to stop a leak. Remove the plug and fit a new "O" ring seal.

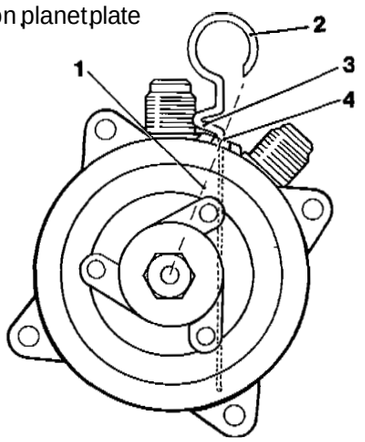
Mounting Angle Degrees	Acceptable Oil Level In Increments
0	2-4
10	**4-5**
20	**5-6**
30	6-7
40	**7-9**
50	**9-10**
60	**10-12**
90	**12-13**



Key to Fig 1

1 Oil filler hole
2 Rod ball
3 Piston rod
4 Ball socket on planet plate

Fig 1



Key to Fig 2

1 The mounting angle
2 Dipstick
3 The stop
4 Oil filler hole

Fig 2

It is not necessary to check the oil level as a routine maintenance. However, should there be a good reason to suspect an incorrect oil level because of leaks carry out the following procedure.

1 Run the engine for approximately 10 minutes.

2 Discharge the system being careful not to lose oil.

3 Follow the procedure described on the previous page.

NEW COMPRESSOR OIL LEVEL CHECK

When replacing a Sanden cornpressor containing uncontaminated oil with a new cornpressor, use the following procedure.

1 Drain the oil from the new compressor.
2 Drain and measuer the oil from the old compressor.
3 Measure the new oil equal to the amount drained from the old compressor and add one fluid ounce (30 cc) of new to this amount. Use it to refill the compressor.

FLUSHING

The system must be flushed when a new fitted or becomes contaminated.
When flushing the system with R11, do not allow the R11 to enter the compressor.

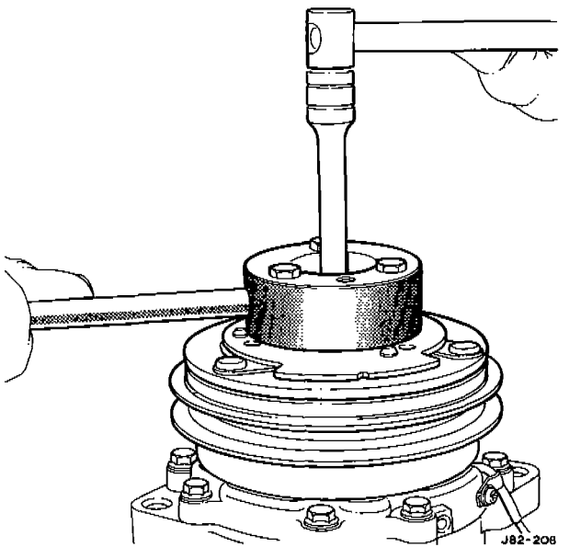


Fig 1

CLUTCH

REMOVE **82.00.00**

All the clutch service operations must be performed on a bench and the following proceduresstrictly adhered to.
The clutch includes a counter-weight on the front plate to improve dynamic balance.
Fit service tool JD 146 to the clutch front plate (Fig 1).

Fit the centre bolt assembly, and position the holding shaft into the centre bolt assembly locating hole (Fig 1).

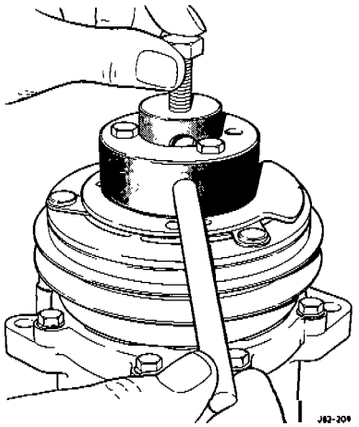


Fig 1

Align the puller centre bolt to the compressor shaft. Finger tighten the three puller bolts into the threaded holes.
Turn the centre bolt clockwise until the front plate is loosened (Fig 2). Remove the plate. Remove the shaft key.

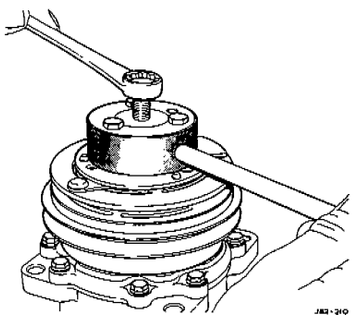


Fig 2

Remove the internal bearing circlip by using pinch type of circlip pliers only (Fig 3).

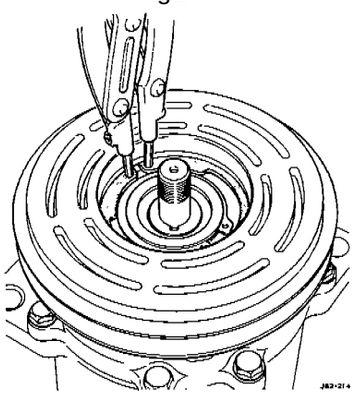


Fig 3

Remove the front housing circlip by using spread type of circlip pliers (Fig 4).

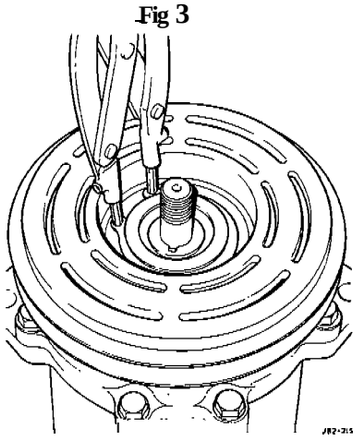


Fig 4

Insert the lip of the puller jaws into the circlip groove (Fig 3).

Place the rotor shaft protector over the exposed shaft (Fig 1).

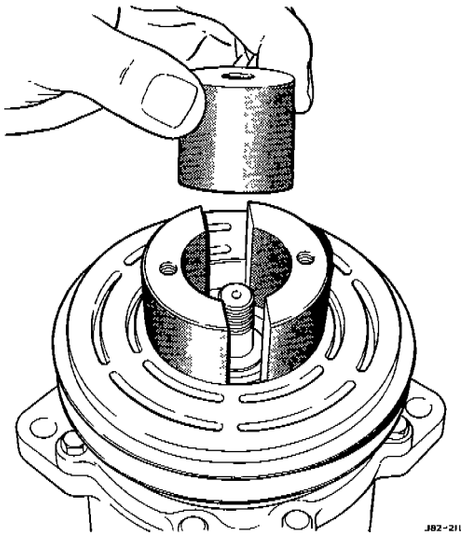


Fig 1

Align the thumb bolts to the puller jaws (Fig 2).

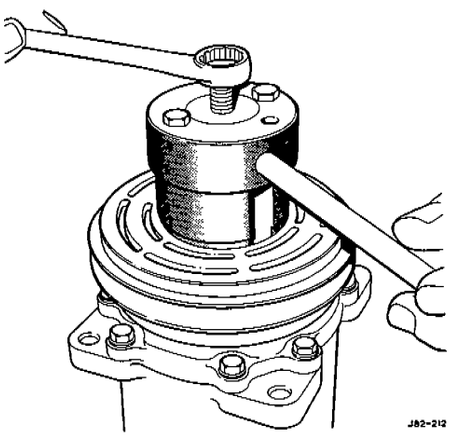


Fig 2

Turn the puller centre bolt (fig 3) until the rotor puller is free.

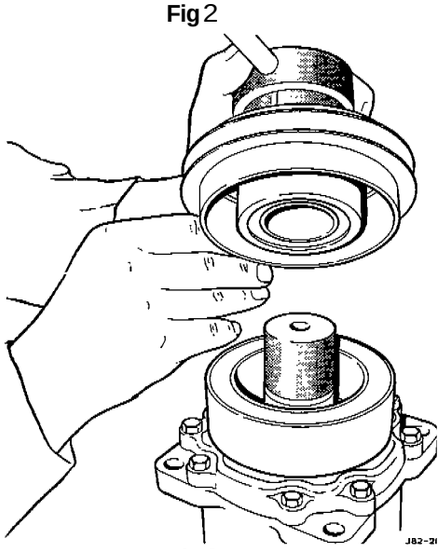
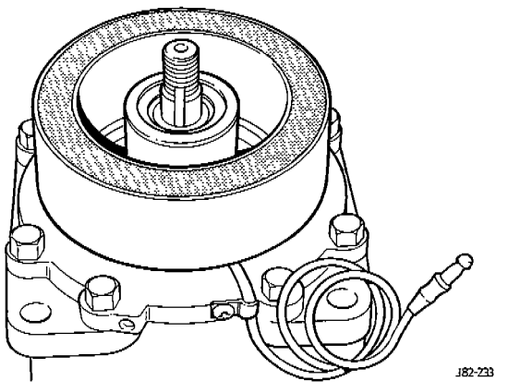


Fig 3

Loosen the field coil lead from its clip **on** top of the compressor (Fig 1).



Using spread type of circlip pliers remove the circlip and field coil (Fig 2).

Refit the field coil in the reverse order to the removal procedure previously described.
The coil flange protrusion must match the hole in front of housing to prevent coil movement.
Correctly locate the field coil lead.
Support the compressor on the four mounting ears at the rear of the compressor. If using a vice, clamp on the mounting ears NOT ON THE COMPRESSOR BODY.
Align the rotor assembly squarely on the front housing hub.

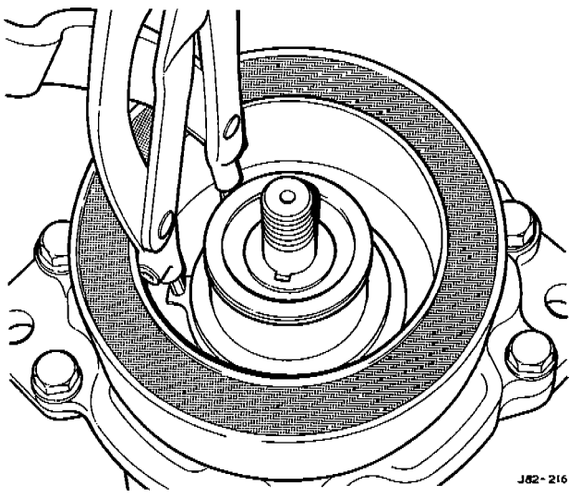


Fig 2

Using the rotor installer set, place the ring part of the set into the bearing cavity. Make certain the outer edge rests firmly on the rotor bearing outer race.
Place the tool set driver into the ring (Fig 3)

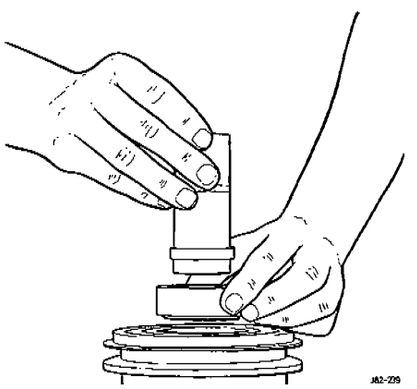


Fig 3

With a hammer, tap the end of the driver while guiding the rotor to prevent binding. Tap until the rotor bottoms against the compressor front housing hub. Listen for a distinct change of sound during the tapping process (Fig 1).
Refit the internal bearing circlip using pinch type of circlip pliers.
Refit the external front housing circlip using spread type of circlip pliers.
Check that the original clutch shims are in place on the compressor shaft.
Replace the compressor shaft key.
Align the front plate to compressor shaft key.

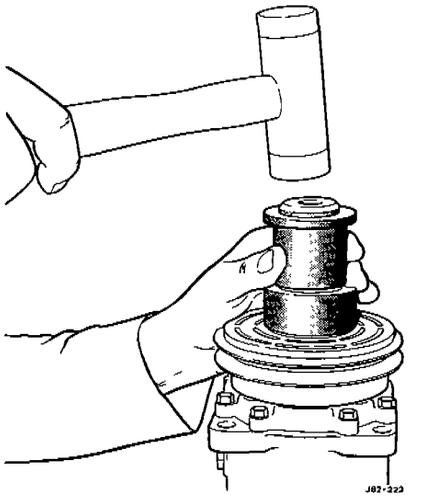


Fig 1

Using a shaft protector, tap the front plate to shaft it has bottomed to the clutch shims. Note distinct change of sound.

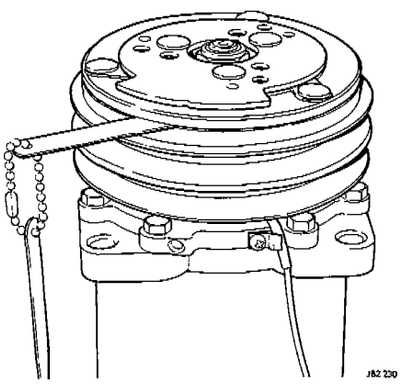


Fig 2

Refit the shaft nut and torque to 23-30 ft.lbf (3.4-4.2 kgf.m).
Check the air gap with a 0.016 to 0.031 inch feeler gauge (Fig 2).
If the gap is not consistant around the circumference, lightly tap down at the maximum gap and gently prise up at the minimum gap.
NOTE: The air gap is determined by the spacer shims. When fitting a new clutch assembly, try the original shims first. Add or subtract shims if the air gap does not meet the above specifications.

SHAFT SEAL

RENEW ***82.00.00***

Remove the clutch as previously described.
Using circlip pliers, insert the points into the **two** holes of the felt ring metal retainer and lift out the felt ring (fig 3).

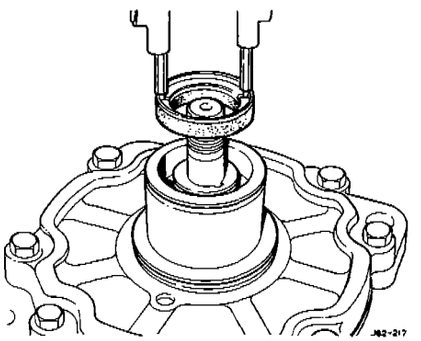


Fig 3

Remove the clutch shims. Use "O" ring hook and a small screwdriver (Fig 1) to prevent shims from binding on the shaft.

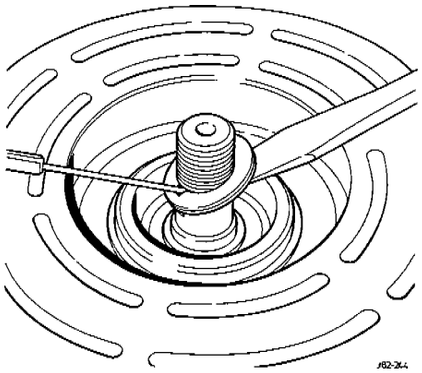


Fig 1

Remove the shaft seal seat retaining circlip using pinch type circlip pliers (Fig 2).

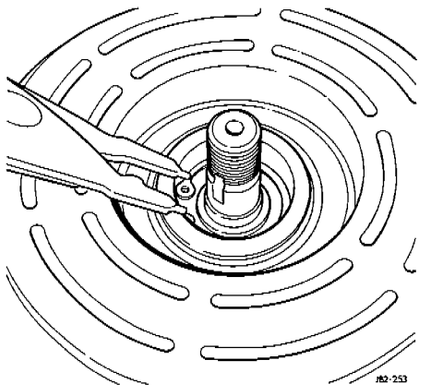
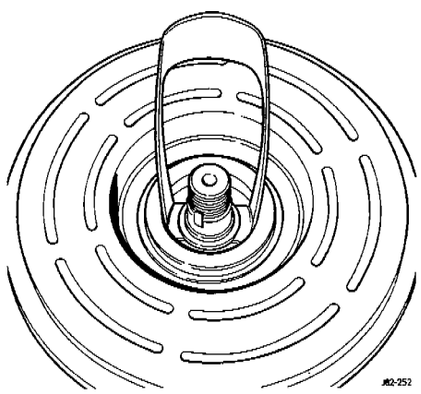


Fig 2

Remove the shaft seal seat by using the tongs (Fig 3)



Use the "O" ring hook to remove the shaft seal "O" ring. Take care not to damage the groove (Fig 4).

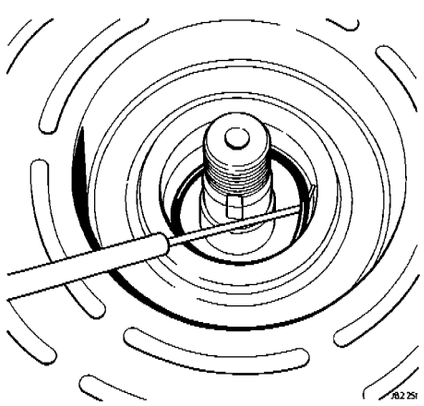


Fig 4

Insert the seal remover and installer tool against against the seal assembly. Press down against the seal spring and twist the tool until feeling it engage in the slots of the seal cage. Lift out the seal assembly (Fig **1**).

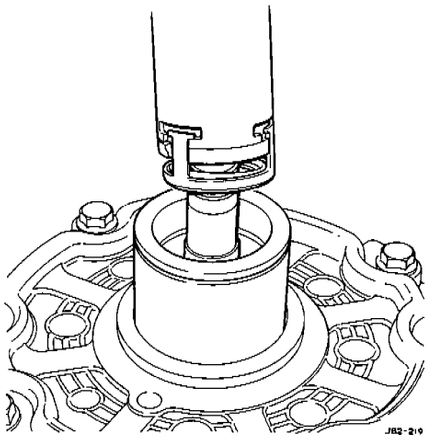


Fig 1

Clean the seal cavity thoroughly with **R11** or **R12.** Blow out with dry pressurized vapour. Clean thoroughly with "lint-free" or synthetic cloth and clean refrigerant oil. Then blow out with dry pressurized vapour.
Make sure all foreign substances are completely removed.
Insert the seal sleeve protector over the compressor shaft (Fig 2).
Do not touch the new seal lapping surface. Dip the mating surface in a clean refrigerant oil before proceeding.

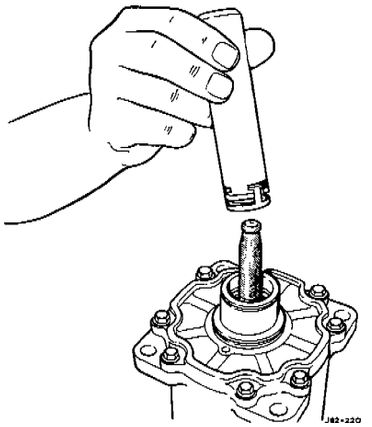


Fig 2

Engage the slots of the seal remover and installer to the new seal cage. Insert the seal assembly firmly into place in the compressor seal cavity. Twist the tool in the opposite direction to disengage the tool from the seal cage (Fig 3).
Remove the tool.

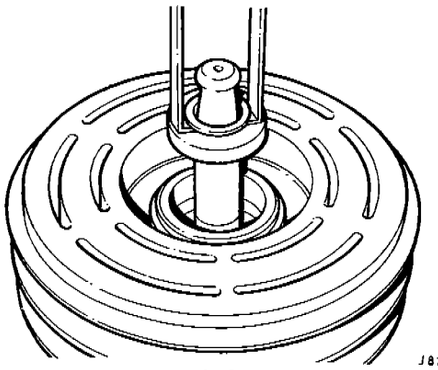


Fig 3

Coat the new "O" ring with clean refrigerant oil.
Carefully place in the seal groove with the "O" ring hook (Fig 4). Do not scratch the suface.

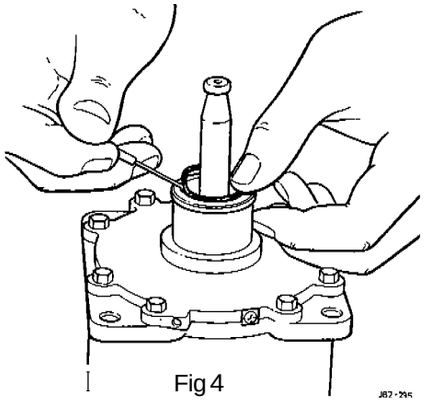


Fig 4

Coat the seal retainer with clean refrigerant oil. Use the **tongs** and press the retainer lightly against the seal (Fig **1**).

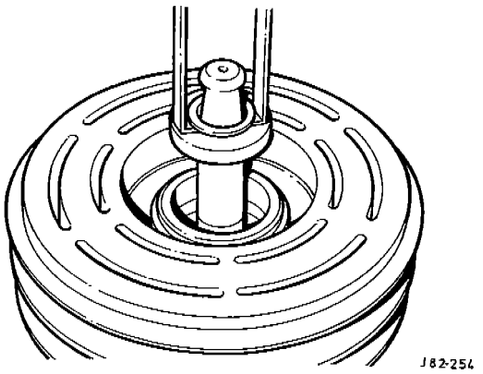


Fig 1

Refit the circlip with the beveled edge outward away from the compressor. Flat side towards the compressor (Fig 2). **It** may be necessary to lightly **tap** the circlip to securely position **it** in its groove.
Replacethe clutch spacer shims.

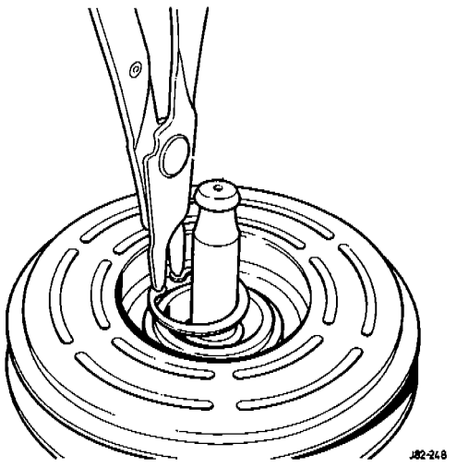


Fig 2

Tap a new felt ring into place (Fig **3).**
Refitfront clutch plate.

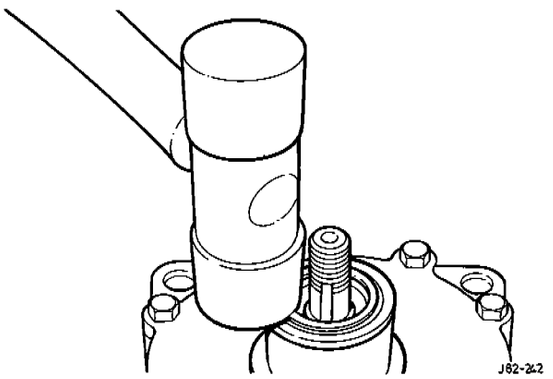


Fig 3

0206G

AIR CONDITIONING

FUNCTIONAL TEST

82.00.00

Start and run engine until normal operating temperature is reached.
Open the fascia and the rear vents.
Switch the left hand control to low fan speed.
Select the mid position of the face level control.
Turn the right hand control to the fully cold position.
Select manual by pressing the **mode** switch until 'MAN' is illuminated.
Ensure the 'AIR' button is not illuminated.
Ensure all humidity button lights are not illuminated to give full air conditioning.

Check that the recirculation flaps are open.
Press the 'ECON' button and ensure the compressor clutch disengages (the engine revs change and there is an audible click).
Press the 'ECON' button and ensure the compressor clutch re-engages (the engine revs change).
Switch the left hand control to normal fan speed and check that the fan speed increases.
Switch the left hand control to high fan speed and check that the fan speed increases.
Switch the left hand control to defrost and check that all the air is to the windscreen and no air at the footwell.
Switch the left hand control to high fan speed, ensure that there is no air to the windscreen but air to the footwell.
Press the 'air' button, ensure that air is to the screen and at the footwell also ensure the 'air' button light illuminates.

Press the 'air' button, ensure that there is no air to the windscreen and the 'air' button light does not illuminate.
Switch the left hand control to normal fan speed, check for very cold air from the centre vent and rear compartment vent.
Turn the right hand control to full heating.
Ensure the engine is running at normal operating temperature.
Ensure the centre vent closes, there is warm air from side, footwell and rear compartment vents.
Turn the right hand control to the minimum red position.
Ensure cool air bleed from the centre vent.
Turn the right hand control to the full cold position.
Ensure the centre vent fully opens with cold air.
Select auto by pressing the mode switch until 'AUTO' is illuminated.
Turn the right hand control to the mid point position.
Run the vehicle and allow the system to stabilise.
Apply heat to the in-car sensor using a lamp.
Ensure the temperature drops at the side vents and the centre vent **opens.**

02796

CONTENTS

DESCRIPTION	OPERATION	OPERATION No	PAGE No
COMPRESSOR ASSEMBLY LESS CLUTCH - SANDEN 500 and 700 SERIES	RENEW	$2.10.19	82-69
COMPRESSOR DRIVE CLUTCH	RENEW	82.10.08	82-66
COMPRESSOR FRONT OIL SEAL	RENEW	82.10.11	82-68
CO'MPRESSOR PULLEY BEARING	RENEW	82.10.10	82-67
GASKET KIT	RENEW	82.10.26	82-71
HOSE - COMPRESSOR TO EVAPORATOR	RENEW	82.25.02	82-72
MUFFLER	RENEW	82.10.24	82-70
FIELD COIL	RENEW	82.10.25	82-71
VALVE PLATE	RENEW	82.10.27	82-72

COMPRESSOR DRIVE CLUTCH

RENEW 82.10.08

Open the bonnet and fit a wing cover.
Depressurize the air conditioning system, refer to 82.30.05.
Remove the bolt securing the muffler plate.
Remove the muffler securing bolt.
Remove and discard the 'O' ring seals.
Fit protective caps to the disconnected hoses and a protection plate to the compressor.
Place the compressor in a vice, tighten the vice onto the body lugs.
Fit tool JD166-1 (1 Fig 1) to the compressor, fit and tighten the securing screws (2 Fig 1). Fit tommy bar (3 Fig 1) to JD166-1 and remove the drive clutch securing nut.
Fit tool JD166-3 (1 Fig 2) to JD166-1 and reposition the tommy bar to engage JD166-3.
Tighten the tool centre bolt (2 Fig 2) to remove the drive clutch.
Remove the drive clutch complete with the tool attached from the compressor.
Set the tool centre bolt to its original position for future use.
Remove the screws (2 Fig 1) securing tool JD166-1 to the drive clutch and remove the tool.
Remove the drive clutch air gap adjustment shims from the compressor shaft.
Remove the woodruff key from the shaft.

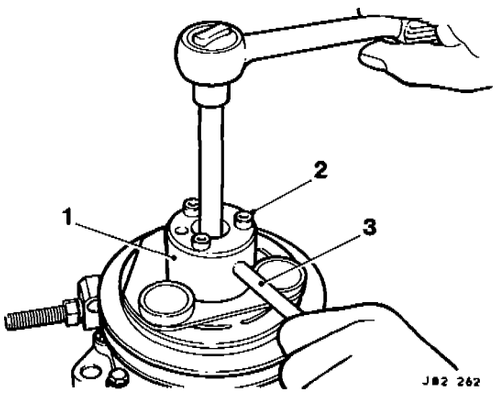


Fig 1

Fit the woodruff key to the shaft.
Fit the drive clutch air gap adjustment shims on the shaft.
Align the drive clutch keyway with the woodruff key and then using a suitable piece of tubing push the drive clutch fully home on the compressor shaft.
Fit tool JD166-1 (1 Fig 1) to the drive clutch, fit and tighten the securing bolts.
Fit tommy bar JD166-2 (3 Fig. 1) to JD166-1 and then fit and tighten the drive clutch securing nut.
Remove the screws (2 Fig 1) securing the tool to the drive clutch and detach the tool.
Check the air gap.
Remove the compressor from the vice and refit it to the vehicle.
Remove the wing cover and close the bonnet.

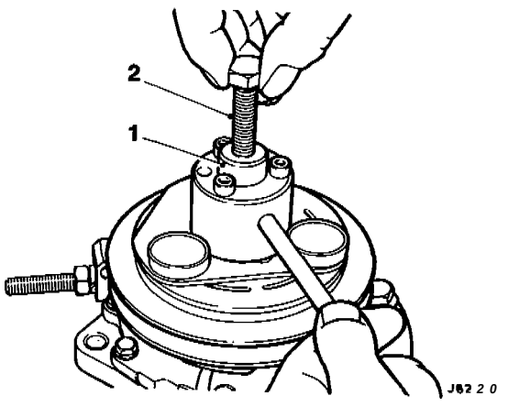


Fig 2

COMPRESSOR PULLEY BEARING

RENEW **82.10.10**

Open the bonnet and fit a wing cover.
Depressurize the air conditioning system.
Remove the compressor refer to 82.10.20.
Remove the compressor drive clutch, refer to 82.10.08.
Displace and remove the snap ring retaining the pulley assembly on the compressor.
Fit thread protection tool JD166-5 (5 Fig 1) on the compressor shaft. This will aid collet to pulley engagement in the following operation.
Engage the collets (1 Fig 2) of tool JD 166-5 (2 Fig 2) with the recess in the pulley internal diameter.
Assemble tool JD166-1 (1 Fig 1) to tool collets JD166-5 (6 Fig 1), fit and tighten the securing screws (2 Fig 1).
Fit tool JD166-3 (3 Fig 1) to tool JD166-1 (1 Fig 1), fit tommy bar JD166-2 (4 Fig 1) through tools JD 166-1 and JD 166-3
Tighten the centre bolt of tool JD166-1 to remove the pulley assembly.
Remove the pulley complete with the tool from the compressor.
Remove the collets from the pulley and the thread protection tool from the compressor shaft.
Place the pulley on a bench with the pulley uppermost, remove the snap ring securing the bearing in the pulley.
Invert the pulley and fit tool JD166-7 (1 Fig 3) to abut the bearing face.
Using a soft face mallet remove the bearing from the pulley.
Remove tool JD166-7 from the pulley and discard the bearing,

Place the pulley on a bench and fit the bearing. Place tool JD166-7 (1 Fig 3) on the bearing and then using a soft face mallet drive the bearing fully home.
Remove tool JD166-7 from the pulley/bearing assembly and fit the bearing to pulley snap ring.
Fit the pulley to the compressor. Position tool JD166-7 so that it abuts the inner race face of the bearing.
Using a soft face mallet drive the pulley/bearing assembly fully home.
Fit the pulley to compressor retaining snap ring.
Fit the drive clutch, refer to 82.10.08.
Fit the compressor to the vehicle.
Recharge the air conditioning system with refrigerant.
Remove the wing cover and close the bonnet,

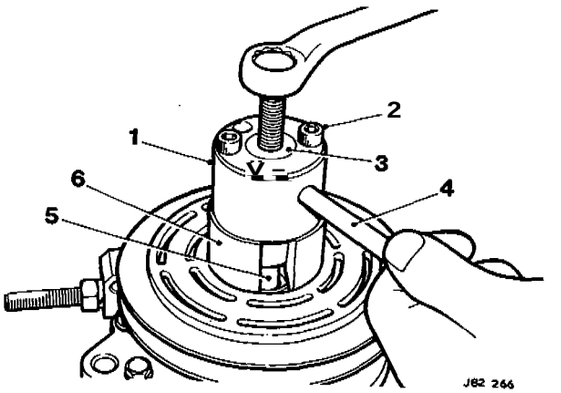


Fig 1

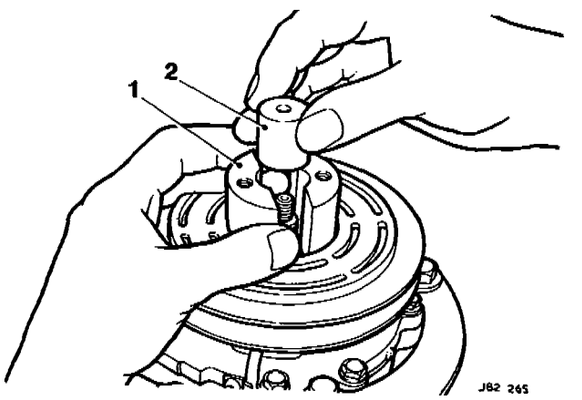


Fig 2

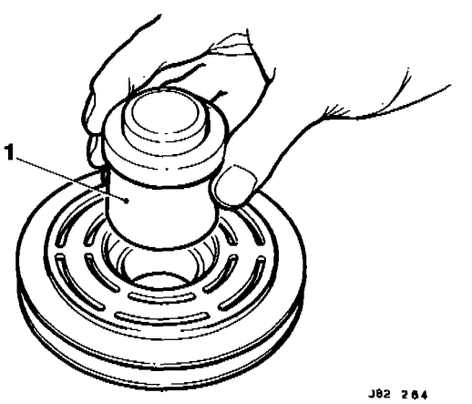


Fig 3

COMPRESSOR FRONT OIL SEAL

RENEW **82.10.11**

Open the bonnet and fit a wing cover.
Depressurize the air conditioning system, refer to 82.30.05.
Remove the compressor, refer to 82.10.20.
Remove the compressor drive clutch, refer to 82.10.08.
Remove the woodruff key, felt seal and seal seat retaining snap ring from the compressor shaft.
Fit tool JD167 (1 Fig.1) to the seal seat (2 Fig.1), ensure that the tangs of the tool engage the groove of the seal seat.
Remove the seal seat from the compressor and detach the tool from the seal seat.
Remove the seal seat 'O' ring.
Fit tool JD168 (1 Fig.2) to the front seal, ensure that the tangs of the tool engage those on the seal.
Remove the seal from the compressor using a twisting action.
Remove the seal from the tool.
Fit thread protector tool (2 Fig.3) on the compressor shaft.
Smear the **new** front seal with clean refrigerant oil and fit the **seal** in tool JD168 (1 Fig.2).
fit the new **seal** on the compressor shaft using **a** twisting action, disengage and remove the tool from the front seal.
Remove the seal protector tool from the compressor **shaft.**
Apply clean refrigerant oil **to** the seal seat 'O' ring, fit the 'O' ring to the seal seat.
Fit tool JD167 to seal seat (1 Fig.1), **ensure** that the tangs of the tool engage the groove in the seal seat.
Fit the seal seat to the compressor ensuring that it is **fully** seated.
Remove tool JD167 from the seal seat.
Fit the seal seat retaining **snap** ring **and** ensure that **it is** fully seated.
Fit the felt ring and the woodruff key.
Refit the compressor and compressor drive clutch.

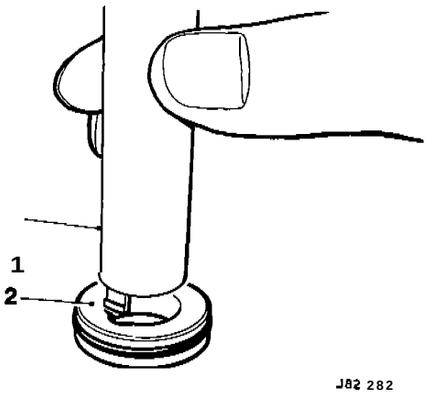


Fig 1

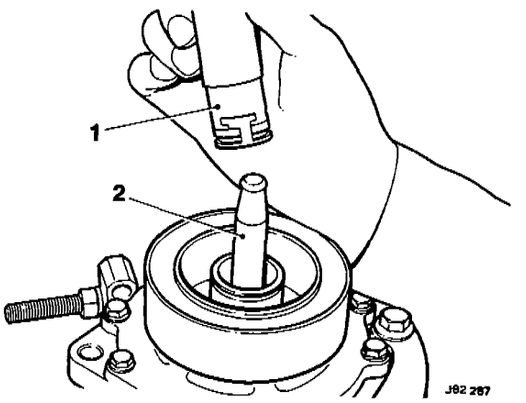


Fig 2

COMPRESSOR ASSEMBLY LESS CLUTCH - SANDEN 500 AND 700 SERIES

RENEW **82.10.19**

Open the bonnet and fit a wing cover.
Depressurize the air conditioning system.
Remove the compressor outlet port retaining plate securing bolt, detach the plate.
Disconnect the compressor hose, remove and discard the 'O' ring seal.
Fit a blanking plug to the compressor outlet port.
Remove the compressor pivot bolt securing nut.
Carefully separate the muffler from the compressor, remove and discard the 'O' ring seal.
Fit a blanking plug to the muffler and a blanking plate to the compressor, fit and tighten the blanking plate securing bolt.
Raise the vehicle to working height on a ramp.
Slacken the compressor drive belt adjuster rod and adjuster plate securing nuts and bolts (4,5,6 and 7 Fig.1)
Slacken adjuster nut (5 Fig.1).
Remove the nut and bolt (4 and 5 Fig.1) from adjuster plate (3 Fig.1).
Slacken trunnion nut and bolt (9 and 2 Fig.1) and remove the adjuster rod (1 Fig.1).
Disconnect the compressor multi-plug.
Remove the compressor drive belt.
Pivot the compressor away from engine, support the compressor and remove the top pivot bolt and lift the compressor clear of the vehicle.
Remove the mounting brackets from the compressor.
Remove the compressor pulley from the compressor shaft refer to 82.10.10.
Remove the drive clutch from the compressor refer to 82.10.08.
Remove the field coil from the compressor refer to 82.10.25.
Remove the woodruff key from the compressor shaft.

Position the mounting brackets on the compressor, fit and tighten the securing bolts and nuts.
Fit the woodruff key to the compressor drive shaft.
Fit the field coil to the compressor, refer to 82.10.25.
Fit the pulley to the compressor shaft, refer to 82.10.10
Fit the drive clutch to the compressor, refer to 82.10.08.
Lift the compressor up to the engine and fit the top pivot bolt from above.
Loosely attach adjustment rod (1 Fig.1) to the compressor with nut and bolt (6 and 7 Fig.1).
Loosely attach adjustment plate (3 Fig.1) to the compressor with nut and bolt (4 and 5 Fig.1).
Fit bolt (2 Fig.1) through trunnion (6 Fig.1) and fit nut (9 Fig.1) to the bolt.
Fit the drive belt over the pulley, move the compressor away from the engine to tension the drive belt and lightly tighten the bolts and nuts.
To obtain the correct tension on the drive belt tighten adjuster nuts (7 Fig.1). The belt is correctly tensioned when a load of 59 - 63.6 kg (130 -140 lb) applied at the centre deflects the belt 4mm.

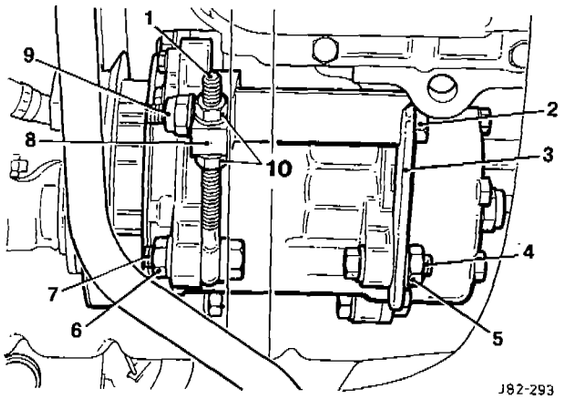


Fig 1

Ensure that all securing bolts and nuts are fully tightened.
Lower the vehicle to the ground.
Remove the blanking plate and the blanking plugs from the compressor.
Fit new 'O' ring seals to the muffler and attach it to the compressor.
Fit a new 'O'ring seal to the evaporator hose and connect it to the compressor. Fit the retaining plate, fit and tighten the screw.
Fit and tighten the compressor upper pivot bolt securing nut.
Charge the air conditioning system, refer to 82.30.08.
Remove the wing cover and close the bonnet.

MUFFLER

RENEW **82.10.24**

Open the bonnet and fit a wing cover.
Unscrew the muffler to hose union nut and disconnect the hose from the muffler.
Remove and discard the 'O' ring seal.
Fit a blanking plug to the hose union nut.

Remove the muffler to evaporator/ compressor hose securing bolt.
Remove the compressor pivot bolt securing nut.
Remove the compressor outlet port retaining plate securing bolt.
Disconnect the muffler from the compressor, remove and discard the 'O' ring seal and fit a blanking plug to the compressor connection.

Remove the blanking plug from the muffler
Position the muffler on the compressor, fit the pivot bolt and securing nut, do not tighten the nut.
Remove the blanking plug from the compressor connection, fit a new 'O' ring seal to the connection.
Connect the muffler to the compressor, ensure that the 'O' ring seal is correctly positioned to prevent distortion.
Position the compressor outlet port retaining plate, fit and tighten the retaining plate securing bolt.
Tighten the compressor pivot bolt securing nut
Fit and tighten the muffler to evaporator/compressor securing bolt.
Remove the blanking plug from condenser hose and fit a new 'O' ring seal.
Connect the condenser hose to the muffler, tighten the union nut ensuring that the charging valve is upright.
Remove the wing cover and close the bonnet.

FIELD COIL

RENEW **82.10.25**

Open the bonnet and fit a wing cover.
Depressurize the air conditioning system.
Remove the compressor, refer to 82.10.20.
Remove the compressor drive clutch, refer to 82.10.08.
Remove the compressor pulley, refer to 82.10.10.
Slacken the field coil wire clamp screw (Fig.1) and release the wire from the clamp.
Remove the field coil retaining snap ring and detach the field coil.
Clean the mating face of the compressor with a cloth moistened with an approved cleaning fluid.
Position the new field coil on the compressor and fit the retaining snap ring.
Route the wire to the compressor and fit the wire clamp, tighten the securing screw.
Fit the compressor pulley, refer to 82.10.10.
Fit the compressor drive clutch, refer to 82.10.08.
Fit the compressor, refer to 82.10.20.
Recharge the air conditioning system, refer to 82.30.08.
Remove the wing cover and close the bonnet.

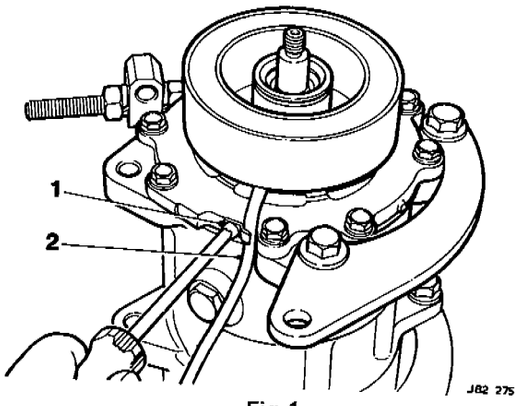


Fig 1

GASKET KIT

RENEW **82.10.26**

Open the bonnet and fit a wing cover.
Depressurize the air conditioning system, refer to 82.30.05.
Remove the compressor, refer to 82.10.20.
Position the compressor in a vice, tighten the vice onto the compressor body lugs.
Remove the outlet port blanking plate securing bolt and detach the plate.
Remove and discard the 'O' ring seals from the outlet port.
Remove the compressor cylinder head securing bolts, detach the cylinder head.
Detach the valve plate from the compressor.
Remove the gaskets from the compressor.

Remove all traces of gasket material from the mating surfaces of the cylinder head, valve plate and cylinder block.

Position new gaskets (1 and 3 Fig.2) on the valve plate (2 Fig. 2) and then place it on the cylinder block.
Position the cylinder head (1 Fig.3) on the cylinder block (2 Fig.3), fit and tighten the securing bolts in the sequence shown in Fig 4.
Fit new 'O' ring seals in the compressor outlet port, position the outlet port blanking plate and fit and tighten the securing bolt.
Refit the compressor refer to 82.10.20.
Recharge the air conditioning system, refer to 82.30.08.

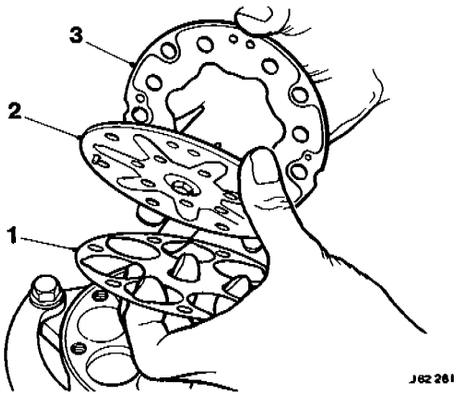


Fig 2

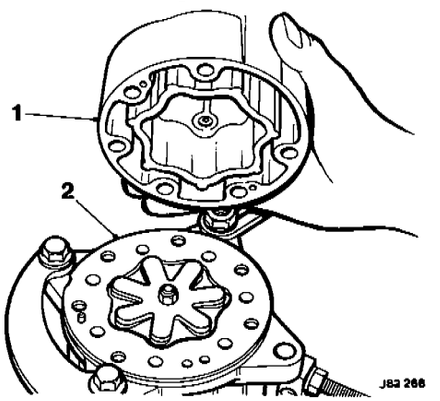


Fig 3

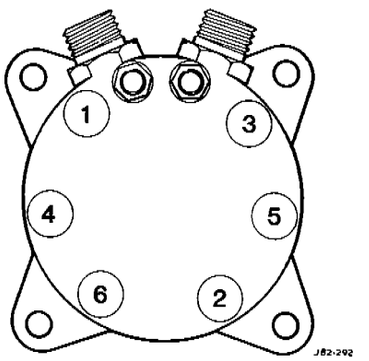


Fig 4

DATA

TORQUE FIGURES
Cylinder head bolts 29.83 to 33.9 Nm

VALVE PLATE

RENEW **82.10.27**

Open the bonnet and fit a wing cover.
Depressurize the air conditioning system, refer to 82.30.05.
Remove the compressor, refer to 82.10.20.
Position the compressor in a vice, tighten the vice onto the compressor body lugs.
Remove the outlet port blanking plate securing bolt and detach the plate.
Remove the 'O' ring seals from the compressor outlet port.
Remove the cylinder head securing bolts and detach the cylinder head (1 Fig.1) from the cylinder block.
Remove valve plate (2 Fig.1) from the compressor.
Remove all traces of gasket material from the mating surfaces of the cylinder head and compressor.
Apply clean refrigerant oil to the gaskets and then position them on the valve plate.
Position valve plate and gaskets (1 and 3 Fig.2) on the compressor and fit the cylinder head.
Tighten the cylinder head securing bolts in the order shown in Fig 3.
Fit new 'O' rings to the outlet port blanking plate, position the plate on the compressor and fit and tighten the securing bolt.
Refit the compressor, refer to 82.10.20.
Remove the wing mat and close the bonnet

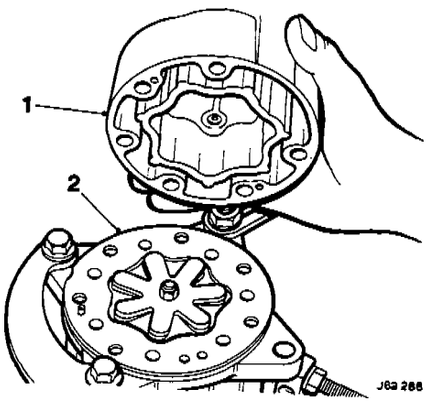


Fig 1

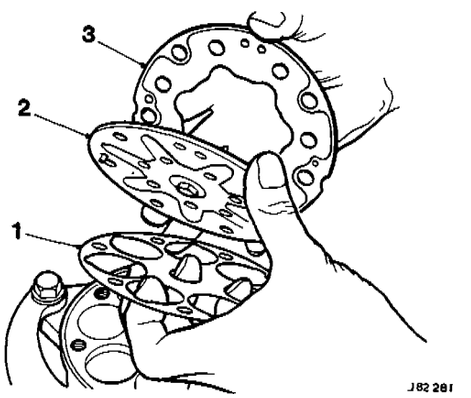


Fig 2

DATA

TORQUE FIGURES
Cylinder head ***bolts 29.83 - 33.9 Nm***

HOSE-COMPRESSOR TO EVAPORATOR

RENEW **82.25.02**

Open the bonnet and fit a wing cover.
Depressurize the air conditioning system, refer to 82.30.05.
Slacken the hose to evaporator valve union nut, disconnect the hose from the valve, remove and discard the 'O' ring seal.
Fit a blanking plug to the evaporator valve.
Remove the muffler to compressor/evaporator hose securing bolt.
Remove the compressor outlet port retaining bolt.
Disconnect the hose from the compressor, discard the hose complete with 'O' ring seals.
Fit a blanking plug to the compressor connection.
Remove the blanking plugs from the compressor and the evaporator valve,
Connect the hose to the evaporator valve, tighten the union nut ensuring that the charging valve is upright
Route the hose to the compressor, fit a new 'O' ring seal and connect it to the compressor.
Position the outlet port retaining plate on the compressor, fit and tighten the securing bolt.
Fit and tighten the muffler to compressor/ evaporator hose securing bolt.
Charge the air conditioning system, refer to 82.30.08.
Remove the wing cover and close the bonnet.

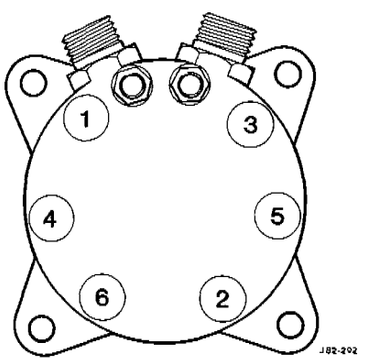


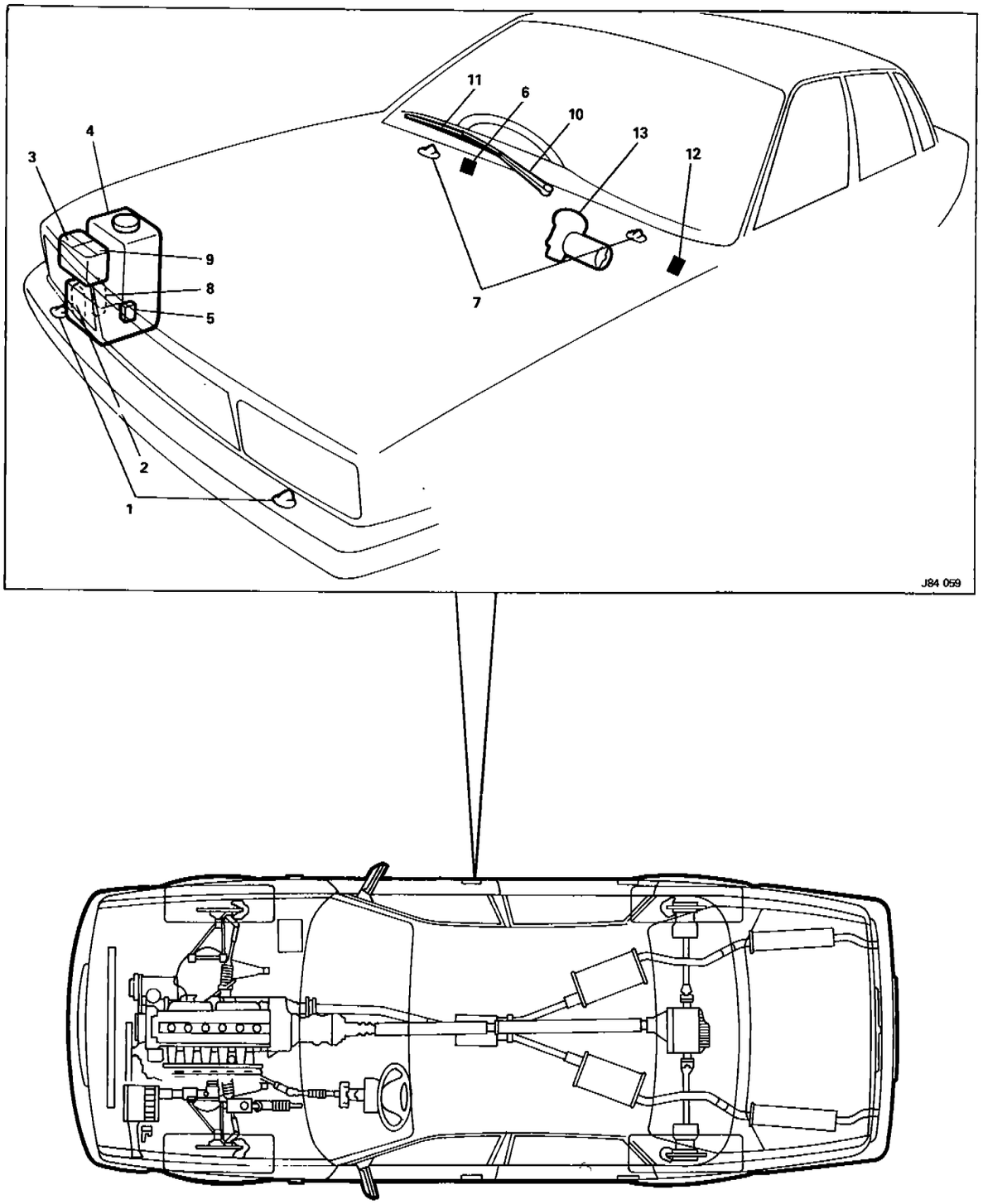
Fig 3

CONTENTS

DESCRIPTION	OPERATION	OPERATION No	PAGE No
HEADLAMP WASHER JETS	RENEW	84.20.08	84-08
HEADLAMP WASHER PUMP	RENEW	84.20.21	**84-09**
HEADLAMP WASHER PUMP RELAY	RENEW	86.55.83	**84-09**
INDEX	ILLUSTRATED	84.00.00	84-02
WASHER RESERVOIR	RENEW	84.10.03	84-05
WASHER RESERVOIR SENSOR	RENEW	84.10.17	84-06
WASHER/WIPER SWITCH	RENEW	84.15.34	84-08
WINDSCREEN WASHER JETS	RENEW	84.10.08	84-05
WINDSCREEN WASHER PUMP	RENEW	84.10.21	84-06
WINDSCREEN WASHER PUMP RELAY	RENEW	86.55.82	84-06
WINDSCREEN WIPERS	INTRODUCTION	84.00.00	84-04
WINDSCREEN WIPERS	OPERATION	84.00.00	84-04
WIPER ARM	RENEW	84.15.02	***84-07***
WIPER BLADE	RENEW	84.15.05	**84-07**
WIPER LOGIC MODULE	RENEW	84.80.11	***84-08***
WIPER MOTOR ASSEMBLY	RENEW	84.15.12	**84-07**

0196G

ILLUSTRATED INDEX



ILLUSTRATED INDEX – KEY

ITEM No	DESCRIPTION	OPERATION No	PAGE No	VOLUME
1	HEADLAMP WASHER JETS	84.20.08	84-08	4
2	HEADLAMP WASHER PUMP	84.20.21	84-09	4
3	HEADLAMP WASHER PUMP RELAY	86.55.83	84-09	4
–	INDEX	84.00.00	84-02	4
4	WASHER RESERVOIR	84.10.03	84-05	4
5	WASHER RESERVOIR SENSOR	84.10.17	84-06	4
6	WASHER/WIPER SWITCH	84.15.34	84-08	4
7	WINDSCREEN WASHER JETS	84.10.08	84-05	4
8	WINDSCREEN WASHER PUMP	84.10.21	84-06	4
9	WINDSCREEN WASHER PUMP RELAY	86.55.82	84-06	4
–	WINDSCREEN WIPERS	84.00.00	84-04	4
10	WIPER ARM	84.15.02	84-07	4
11	WIPER BLADE	84.15.05	84-07	4
12	WIPER LOGIC MODULE	84.80.11	84-08	4
13	WIPER MOTOR ASSEMBLY	84.15.12	84-07	4

0032K

WINDSCREEN WIPER AND WASHERS

INTRODUCTION *84.00.00*

The windscreen wiper motor operates at slow or fast speed, and drives, via a rack assembly, a single arm and blade. The wiper is supplemented by washers, which spray jets of fluid into the path of the wiper blade as it moves across the screen. Intermittent/Flick Wipe operations are both at slow speed and are controlled by the **ECU.** The **ECU** also controls headlamp washer operation (which is permitted only with the headlights switched ON).

Windscreen Wiper and Washer Switch
The switch only operates when ignition is 'ON' and has the following positions:

1 Wiper switched 'OFF' and parked. Normal speed operation of the wiper, obtained by pushing the switch lever up one position.
2 High speed operation of the wiper, obtained by pushing the switch lever fully up.
3 Intermittent operation of the wiper, obtained by pushing the switch lever down against spring pressure and releasing. To cancel the function push the switch down again and release.

To obtain a single sweep of the wiper blade, pull the lever towards the steering wheel and release.
To operate the windscreen washers, press the end of the switch lever.
NOTE: This switch also controls the Headlamp Powerwash.

WINDSCREEN WIPER AND WASHERS

*O*PERATION **84.00.00**

When the washer/wiper switch is in either the slow or fast position, a circuit to earth is completed for slow or fast speed relays located in a wiper logic module. Provided that the ignition switch is ON, the appropriate relay is energised and battery power is applied to fast or slow speed windings of the wiper motor. Inputs and outputs of the logic module are as follows:
1 Slow: a logic earth input at B60-3 results in battery power being applied to the wiper motor through **B59-4.**
2 Fast: a logic earth input at **B60-1** results in battery power being supplied to the wiper motor through **B59-2.**

For intermittent wiper operation a logic earth is applied to connector **B13-4** of the ECU which responds by energising the slow speed relay for periods of half a second at five second intervals. The relay is energised by connector B60-2. Wiper operation in intermittent mode continues until cancelled by either a second application of the wiper switch or by selecting another mode.

For flick wipe operation a logic earth is applied to connector B12-5 of the ECU which again responds by energising the slow speed relay through connector B60-2. The relay is energised for a single period of half a second and wiper motor control is then undertaken by a self parking mechanism which causes the wiper arm to complete one sweep of the screen and then park.

The self parking mechanism is installed within the wiper motor assembly and comprises brushes which engage inner and outer slip rings. The slip rings are arranged so that the outer supplies battery power to the slow speed circuit until the park position is reached and the inner supplies an earth to the motor circuit at the park position to provide dynamic braking. These inputs are applied to the slow speed circuit through connector **B59-5** of the logic module, battery power being supplied to the outer slip ring via B59-6.

When windscreen/headlamp wash is selected, windscreen and headlamp wash relays are energised which connect battery power to respective pumps. The windscreen wash relay is energised direct, but the headlamp relay is energised through the CPU which permits headlamp wash functions only when the headlights are ON.

0196G

WASHER RESERVOIR

RENEW **84.10.03**

Open the bonnet and disconnect the battery earth lead.
Jack up and place the vehicle on two stands.
Remove the nuts, bolts, screws and washers securing the inner wing valance.
Displace and remove the inner wing valance.
Remove the brake disc cooling duct.
Disconnect the washer pump and the reservoir level sensor multi-plug connectors (1 Fig 1).
Disconnect the washer pump tubing from the pump (2 Fig 1).
Remove the bolt and washers securing the reservoir (3 Fig 1).
Remove the reservoir from the filler neck.
Drain the water from the reservoir.
Remove the bolt securing the washer motor clamp plate, remove the plate and remove the pump from the grommet (4 Fig 1).
Displace and remove the fluid level sensor (5 Fig 1).
Remove the clamp nut/grommet assembly.

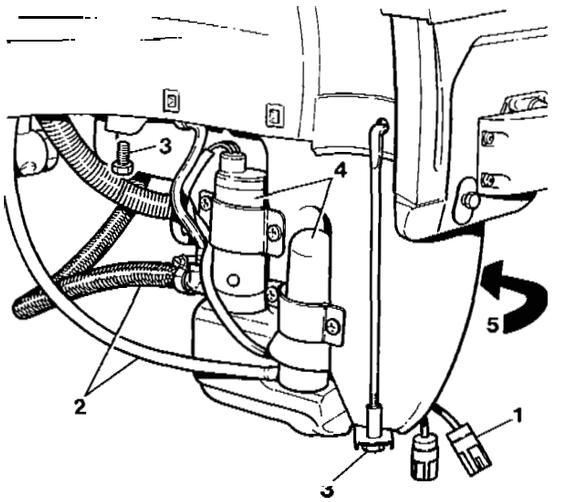


Fig 1

Fitting a new reservoir is the reversal of the removal procedure.

NOTE: To minimise the formation of deposits which affect the operation of the system, it is recommended that the reservoir is filled with a solution of soft water and a proprietary cleaning fluid mixed in accordance with the manufacturer's specification.

0196G

WINDSCREEN WASHER JETS

RENEW **84.10.08**

Open the bonnet and disconnect the battery earth lead.
Remove the wiper arm and blade.
Displace and remove the windscreen lower seal.
Displace and remove the bonnet rear seal.
Remove the front scuttle securing screws and remove the finisher.
Remove the screw securing the washer jet and reposition the jet upwards.
Disconnect the tube from the jet.
Disconnect the multi-plug connector.
Remove the jet assembly (Fig 2).

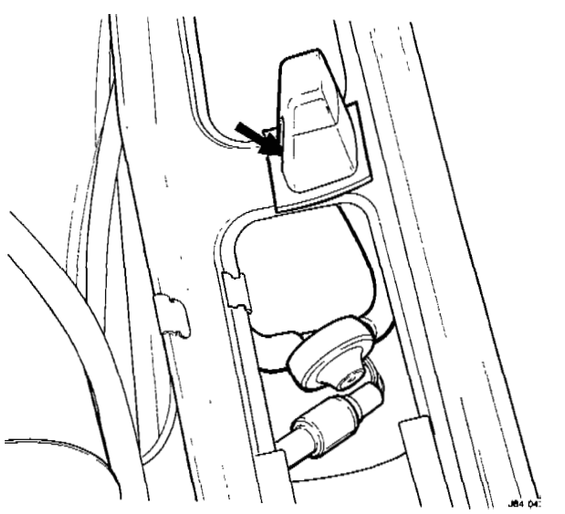


Fig 2

Fitting a new jet is the reversal of the removal procedure.

0196G

WASHER RESERVOIR SENSOR

RENEW **84.10.17**

Open the bonnet and disconnect the battery earth lead.
Jack up and place the vehicle on two stands.
Remove the nuts, bolts, screws and washers securing the inner wing valance.
Displace and remove the inner wing valance.
Remove the brake disc cooling duct.
Disconnect the washer pump and the reservoir level sensor multi-plug connectors (1 Fig 1).
Disconnect the washer pump tubing from the pump (2 Fig 1).
Remove the bolts and washers securing the reservoir (3 Fig 1).
Remove the reservoir from the filler neck.
Drain the water from the reservoir.
Remove the bolt securing the washer motor clamp plate, remove the plate and remove the pump from the grommet (4 Fig I).
Displace and remove the fluid level sensor.
Remove the clamp nut/grommet assembly.
Fitting a new reservoir sensor is the reversal of the removal procedure.

0196G

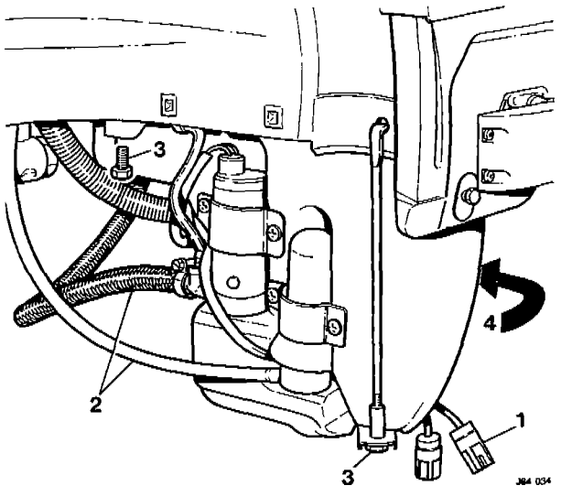


Fig 1

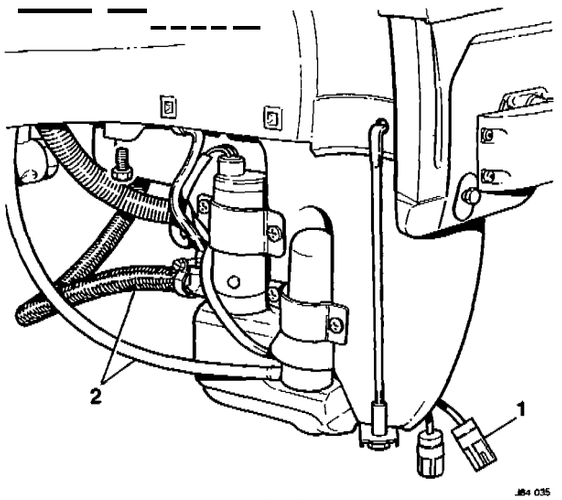


Fig 2

WINDSCREEN WASHER PUMP

RENEW **84.10.21**

Open the bonnet and disconnect the battery earth lead.
Turn the front road wheels to the full lock position for access.
Remove the nuts, bolts and screws securing the inner wing valance.
Remove the valance and the brake disc cooling duct.
Disconnect the pump multi-plug connectors and the washer pump tube (1.2 Fig 2).
Place a suitable container in position.
Remove the bolt securing the pump clamp, remove the clamp and the pump.
Remove the cover from the pump.
Fitting a new pump is the reversal of the removal procedure.

0196G

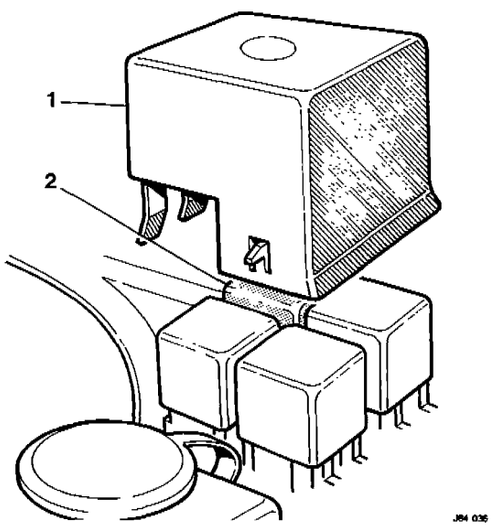


Fig 3

WINDSCREEN WASHER PUMP RELAY

RENEW **86.55.82**

Open the bonnet and disconnect the battery earth lead.
Remove the relay cover (1 Fig 3).
Locate and withdraw the relay from the yellow cable connector block (2 Fig 3).
Fitting a new relay is the reversal of the removal procedure.

0196G

WIPER ARM

RENEW **84.15.01**

Open the vehicle bonnet.
Displace the wiper arm securing nufcover (1 Fig 1).
Remove the nut securing the wiper arm (2 Fig 1).
Position the arm from the screen (3 Fig 1).
Displace and remove the wiper arm.
Fitting a new arm is the reversal of the removal procedure.

0196G

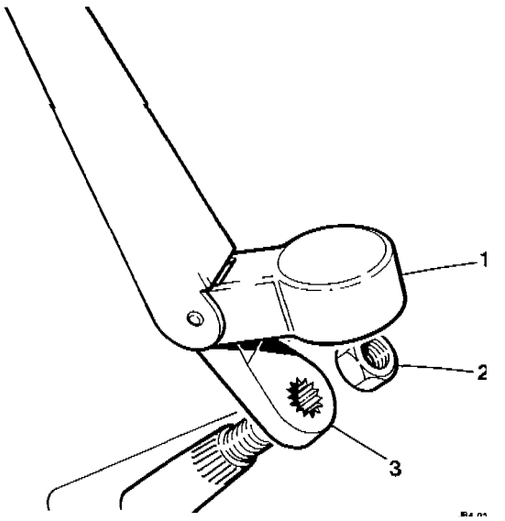


Fig 1

WIPER BLADE

RENEW **84.15.05**

Lift the wiper arm from the windscreen.
Disengage the wiper blade retaining clip (1 Fig 2).
Remove the wiper blade (2 Fig 2).
Fitting a new blade is the reversal of the removal procedure.

0196G

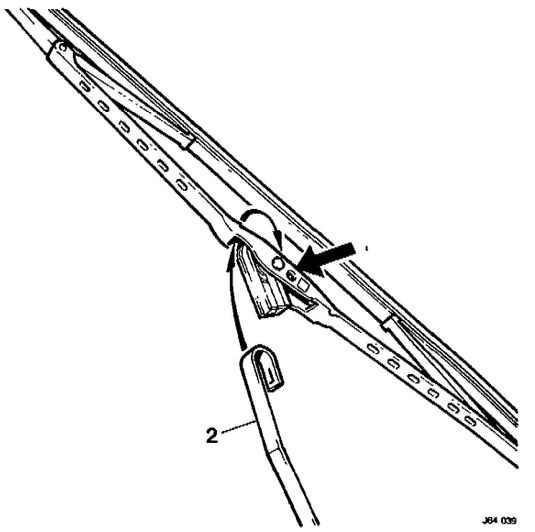


Fig 2

WIPER MOTOR ASSEMBLY

RENEW **84.15.12**

Open the bonnet and disconnect the battery earth lead.
Remove the wiper arm and blade.
Remove the engine compartment rubber seal.
Remove the windscreen rubber lower finisher.
Remove the screws securing the valance and reposition the valance for access.
Remove the wiper drive spindle securing nut and spacer (1 Fig 3).
Disconnect the wiper motor multi-plug connector (2 Fig 3).
Remove the bolt securing the earth lead and disconnect the lead.
Remove the bolts securing the wiper motor assembly (3 Fig 3) and release the assembly lower securng clips.
Carefully manoeuvere the wiper motor assembly clear of its location (4 Fig 3).

Fitting a new motor is the reversal to the removal procedure.
Ensure that all connections including the earth connection are clean and secure.

0196G

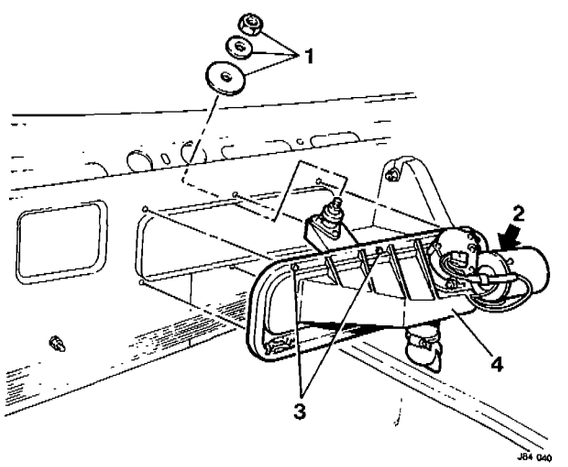


Fig 3

WASHER/WIPER SWITCH

RENEW **84.15.34**

Open the bonnet and disconnect the battery earth lead.
Open the car door, remove the screws securing the steering column cowl and remove the cowl (Fig 1).
Disconnect the washer/wiper switch multi-plug connector.
Release the switch retaining clips.
Remove the switch complete with guide wires and connector from the upper column.

Fitting a new switch is the reversal of the removal procedure.

0196G

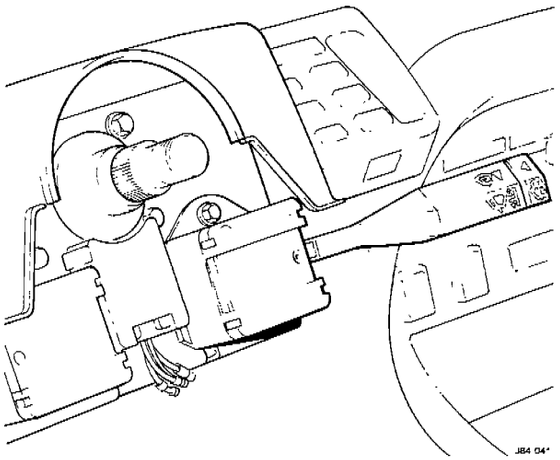


Fig 1

WIPER LOGIC MODULE

RENEW **86.80.11**

Open the bonnet and disconnect the battery earth lead.
Open the passenger door.
Remove the screws securing the passenger dash liner and remove the liner.
Remove the screws securing the module and displace the module (1 Fig 2).
Note and disconnect the cable harness multi-plug connector.
Remove the module.

Fitting a new module is the reversal of the removal procedure.

0196G

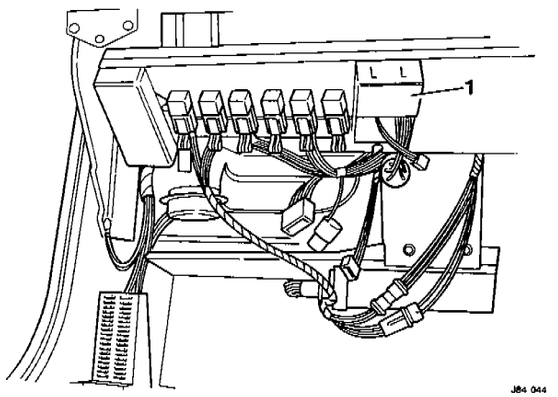


Fig 2

HEADLAMP WASHER JETS

RENEW **84.20.08**

With a suitable implement turn the jet cover anti-clockwise to release (1 Fig 3).
Displace the jet and disconnect the tube from the jet assembly (2 Fig 3).
Disconnect the cable harness multi-plug connector.
Remove the jet.

Fitting a new jet is the reversal of the removal procedure.

0196G

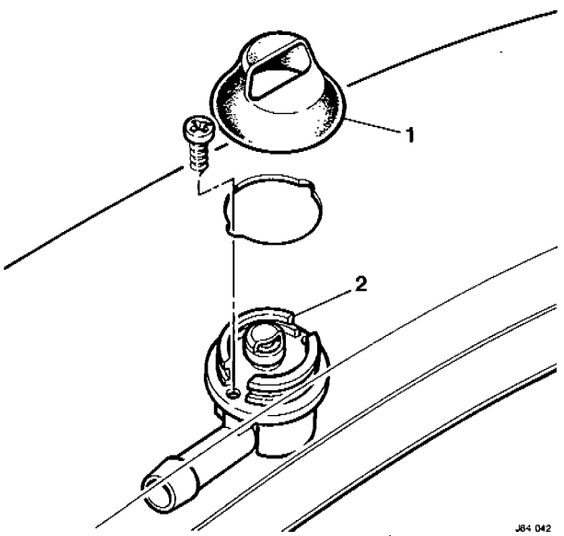


Fig 3

HEADLAMP WASHER PUMP

RENEW **84.20.21**

Open the bonnet and disconnectthe battery earth lead.
Turn the front road wheels to the full lock position for access.
Remove the nuts, bolts and screws securing the inner wing valance.
Removethe valance and the brake disc cooling duct.
Disconnect the pump multi-plug connector and the washer pumptube (1.2 Fig 1).
Placea suitable container in position.
Drain the washer fliud into the container.
Remove the bolt securing the pump clamp, Remove the clamp and the pump.
Removethe cover from the pump.

Fitting a new pump is the reversal of the removal procedure.

0196G

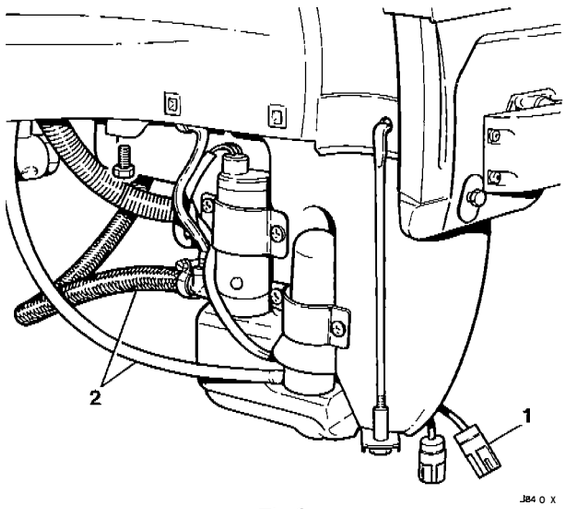


Fig 1

HEADLAMPWASHER PUMP RELAY

RENEW **86.55.83**

Open the bonnet and disconnect the battery earth lead.
Removethe relay cover (1 Fig 2).
Locate and withdraw the relay from the red cable connector block (2 Fig 2).

Fitting a new relay is the reversal of the removal procedure.

0196G

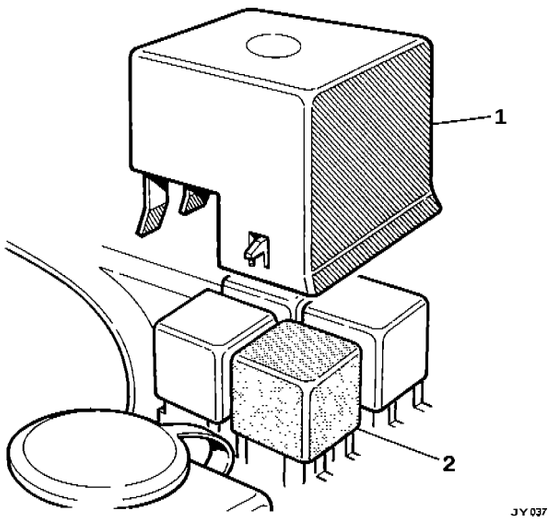


Fig 2

CONTENTS

DESCRIPTION	OPERATION	OPERATION No	PAGE No
A.B.S. EARTH LEAD	RENEW	86.70.39	86-88
ALTERNATOR	RENEW	86.10.02	86-15
ALTERNATOR DRIVE BELT	RENEW & ADJUST	86.10.03105	86-16
ALTERNATOR LOAD DUMP MODULE	RENEW	86.10.06	86-16
ANTI LOCK BRAKE WARNING INDICATOR BULB	RENEW	86.45.92	86-50
AUDIBLE WARNING SPEAKER	RENEW	86.80.20	86-57
AVAILABLE TERMINATED CABLES	DESCRIPTION	86.00.00	86-74
BATTERY	DESCRIPTION	86.15.00	86-17
BATTERY	RENEW	86.15.01	86-20
BATTERY	TEST	86.15.02	86-18
BATTERY CONDITION INDICATOR ILLUMINATION BULB	RENEW	86.45.56	86-44
BATTERY HEALTH AND SAFETY	PRECAUTIONS	86.15.00	86-18
BATTERY LEADS	RENEW	86.15.17119	86-20
BATTERY POWER	DISTRIBUTION	86.15.00	86-21
BOOT OPEN WARNING INDICATOR BULB	RENEW	86.45.87	86-49
BOOT RELEASE SWITCH	RENEW	86.65.25	86-67
BONNET LAMP	RENEW	86.45.24	86-39
BONNET LAMP LENS & BULB	RENEW	86.45.23	86-39
BONNET LAMP LINK HARNESS	RENEW	86.70.26	86-86
BONNET LAMP SWITCH	RENEW	86.65.23	86-40
BOOT LID RELEASE MOTOR	RENEW	86.25.54	86-91
BRAKE WARNING INDICATOR BULB	RENEW	86.45.69	86-46
BULB	CHART	86.00.00	80-12
BULB FAILURE MODULE FRONT	CONNECTORS	86.55.00	86-99
BULB FAILURE MODULE REAR	CONNECTORS	86.55.00	86-101
BULB FAILURE WARNING INDICATOR BULB	RENEW	86.45.77	86-47
BULKHEAD CABLE HARNESS	RENEW	86.70.09	86-75
CARAVAN WARNING INDICATOR BULB	RENEW	86.45.78	86-47
CENTRE CONSOLE SWITCH & CLOCK MODULE	RENEW	86.80.13	86-54
CENTRAL PROCESSOR UNIT	RENEW	86.80.17	86-55
CENTRAL PROCESSOR UNIT PASSIVE RESTRAINT	RENEW	86.55.85	86-90
CHANGES . 91MY		86.00.00	86-106
CHECK ENGINE WARNING INDICATOR BULB	RENEW	86.45.91	86-50
CIRCUIT FAIL WARNING INDICATOR BULB	RENEW	86.45.93	**86-51**
CONTROL SYSTEM	DESCRIPTION	86.80.00	86-14
DIRECTION & HAZARD INDICATION	DESCRIPTION	86.40.00	86-29
DOOR. BOOT AND FUEL FILLER LOCKS	DESCRIPTION	86.25.00	86-24
DOOR LOCK CONTROL MODULE	RENEW	86.80.03	86-54
DOOR LOCK MICRO-SWITCH	RENEW	86.25.44	86-24
DOOR OPEN WARNING INDICATOR BULB	RENEW	86.45.88	86-49
DRIVERS DOOR HARNESS	RENEW	86.70.07	86-80
DRIVERS DOOR LOCK MOTOR	RENEW	86.25.45	86-25
DRIVERS SEAT MOTOR SWITCH	RENEW	86.75.03	86-63
DRIVERS WINDOW LIFT SWITCH	RENEW	86.25.03	86-22
ELECTRICALLY OPERATED AERIAL	DESCRIPTION	86.50.00	86-59
ELECTRICALLY OPERATED AERIAL	RENEW	86.50.21	86-60
ELECTRICALLY OPERATED AERIAL MAST	RENEW	86.50.29	86-61
ENGINE EARTH LEAD	RENEW	86.70.38	86-88
ENGINE HARNESS	RENEW	86.70.21	86-78
EXHAUST TEMPERATURE WARNING INDICATOR BULB	RENEW	86.45.80	86-48
EXTERIOR LIGHTS	DESCRIPTION	86.40.00	86-26
FLASHER CANCELLATION MECHANISM	RENEW	86.65.85	86-56
FLASHER INDICATOR BULB	RENEW	86.45.63	86-44
FOG LAMPS	DESCRIPTION	86.40.00	86-34
FRONT AXLE HARNESS	RENEW	86.70.15	86-83
FRONT BULB FAILURE MODULE	RENEW	86.55.71	86-51
FRONT DOOR SPEAKER	RENEW	86.50.13	86-59
FRONT DOOR WINDOW LIFT MOTOR	RENEW	86.25.04	86-22

CONTENTS

DESCRIPTION	OPERATION	OPERATION No	PAGE No
FRONT FLASHER LAMP	RENEW	86.40.39	86-30
FRONT FLASHER LAMP BULB	RENEW	86.40.4	86-30
FRONT FLASHER LAMP LENS	RENEW	86.40.40	86-30
FRONT PASSENGER WINDOW LIFT SWITCH	RENEW	86.25.06	86-23
FRONT REPEATER LAMP	RENEW	86.40.53	86-31
FUEL GAUGE ILLUMINATION BULB	RENEW	86.45.52	86-43
FUEL PUMP LINK HARNESS	RENEW	86.70.20	86-89
FUEL WARNING INDICATOR BULB	RENEW	86.45.70	86-46
FUSE CHART	LH SIDE BOX	86.00.00	86-104
FUSE CHART	RH SIDE BOX	86.00.00	86-103
FUSE CHART	CENTRE BOX	86.00.00	86-105
FUSE CHART	IN LINE	86.00.00	86-105
GEAR BOX LINEAR SWITCH	RENEW	44.15.12	86-64
GEAR BOX POWER RELAY	RENEW	86.55.89	86-67
GLOVE BOX LAMP	RENEW	86.45.08	86-36
GLOVE BOX LAMP HARNESS	RENEW	86.70.24	86-85
GLOVE BOX BULB	RENEW	86.45.07	86-36
GLOVE BOX SWITCH	RENEW	86.65.77	86-52
HANDBRAKE WARNING SWITCH	RENEW	86.65.45	86-65
HARNESS CONNECTOR	DESCRIPTION	86.70.00	86-68
HARNESSES	DESCRIPTION	86.70.00	86-68
HEADLAMP BULB - LEFT HAND	RENEW	86.40.21	86-28
HEADLAMP BULB - RIGHT HAND	RENEW	86.40.22	86-28
HEADLAMP UNIT - LEFT HAND	RENEW	86.40.19	86-27
HEADLAMP UNIT - RIGHT HAND	RENEW	86.40.20	86-28
HEADLAMP HIGH BEAM INDICATOR BULB	RENEW	86.45.65	86-45
HEADLAMP/HORN/INDICATOR COMBINATION SWITCH	RENEW	86.65.55	86-92
HEATED BACKLIGHT EARTH LEAD	RENEW	86.70.32	86-87
HEATER INDICATOR PANEL BULB	RENEW	86.45.73	86-42
HEATER SWITCH CONTROL MODULE	RENEW	86.80.14	86-55
HIGH COOLANT TEMPERATURE WARNING INDICATOR BULB	RENEW	86.45.89	86-49
HORNS	DESCRIPTION	86.30.00	86-26
HORNS	RENEW	86.30.09	
IGNITION INDICATOR BULB	RENEW	86.45.64	86-45
IGNITION SWITCH	RENEW	86.65.03	86-62
IGNITION SWITCHED EARTH DISTRIBUTION	DESCRIPTION	86.65.00	86-62
IGNITION SWITCHED POWER DISTRIBUTION	DESCRIPTION	86.65.00	86-61
ILLUMINATED SUN VISOR BULB	RENEW	86.45.95	86-67
INDEX	ILLUSTRATED	86.00.00	86-04
INDEX ILLUSTRATED	KEY	86.00.00	86-05
INSTRUMENT ILLUMINATION	RENEW	86.45.48	86-40
INSTRUMENT ILLUMINATION DIMMER MODULE	RENEW	86.80.18	86-56
INTERIOR LAMPS	DESCRIPTION	86.45.00	86-35
INTERIOR LAMP ASSEMBLY	RENEW	86.45.13	86-37
INTERIOR LAMP BULB	RENEW	86.45.06	86-37
INTERIOR LAMP LENS	RENEW	86.45.11	86-37
INTERIOR READING LAMP LINK HARNESS	RENEW	86.70.23	86-83
L.C.D. ILLUMINATION BULB	RENEW	86.45.57	86-44
LIGHTING LOGIC AND SWITCH MODULE	RENEW	86.80.05	86-54
LOGIC EARTH DISTRIBUTION	DESCRIPTION	86.00.00	86-61
LOW COOLANT WARNING INDICATOR BULB	RENEW	86.45.74	86-46
LUGGAGE COMPARTMENT LAMP	RENEW	86.45.16	86-38
LUGGAGE COMPARTMENT LAMP BULB	RENEW	86.45.15	86-38
LUGGAGE COMPARTMENT LAMP SWITCH	RENEW	86.65.22	86-52
LUGGAGE COMPARTMENT LOCK MOTOR	RENEW	86.25.49	86-26
MANUAL TRANSMISSION SWITCH LINK HARNESS	RENEW	86.70.19	86-85
MAP LAMP BULB	RENEW	86.45.09	86-36
MAP LAMP LENS	RENEW	86.45.18	86-38

CONTENTS

DESCRIPTION	OPERATION	OPERATION No	PAGE No
NUMBER PLATE LAMP & BULB	RENEW	86.40.84	86-34
OIL GAUGE ILLUMINATION BULB	RENEW	86.45.50	86-43
OIL PRESSURE INDICATOR BULB	RENEW	86.45.66	86-45
PARKING LAMP INDICATOR BULB	RENEW	86.45.78	86-48
PASSENGER DOOR HARNESS	RENEW	86.70.08	86-80
PASSENGER SEAT MOTOR SWITCH	RENEW	86.75.05	86-63
PASSIVE RESTRAINT ECU	CONNECTORS	86.55.00	86-98
PASSIVE RESTRAINT SYSTEM	FAULT DIAGNOSIS	86.55.00	86-93
POWERED SEATS	DESCRIPTION	86.75.00	86-62
POWERED SEAT HARNESS	RENEW	86.70.11	86-82
POWERED SEAT LINK LEAD	RENEW	86.70.12	86-82
REAR AXLE HARNESS LH	RENEW	86.70.17	86-84
REAR AXLE HARNESS RH	RENEW	86.70.16	86-84
REAR BULB FAILURE MODULE	RENEW	86.55.70	86-51
REAR COURTESY LAMP	RENEW	86.46.03	86-42
REAR DOOR HARNESS	RENEW	86.70.47	86-81
REAR DOOR LOCK MOTOR	RENEW	86.25.47	86-25
REAR DOOR SPEAKER	RENEW	86.50.14	86-60
REAR FOG LAMP ASSEMBLY	RENEW	86.41.15	86-35
REAR FOG LAMP BULB	RENEW	86.41.20	86-35
REAR SIDE MARKER LAMP	RENEW	86.40.64	86-31
REAR SIDE MARKER LAMP BULB	RENEW	86.40.62	86-32
REAR WINDOW LIFT MOTOR	RENEW	86.25.09	86-23
REAR WINDOW LIFT SWITCH	RENEW	86.25.10	86-24
REPEATER LAMP ASSEMBLY	RENEW	86.40.53	86-31
REPEATER LAMP BULB	RENEW	86.40.51	86-31
REVERSE INHIBIT RELAY PASSIVE RESTRAINT	RENEW	86.55.84	86-89
SCREENWASH HEATER - 91MY	DESCRIPTION	84.10.00	86-13
SEAT BELT BUCKLE SWITCH	RENEW	86.57.25	86-66
SEAT BELT WARNING INDICATOR BULB	RENEW	86.45.75	86-47
SEAT ENTRY SWITCH LINK HARNESS	RENEW	86.70.48	86-91
SEAT PAD SWITCH	RENEW	86.57.21	86-66
SIDE. STOP, REVERSE & NUMBER PLATE LAMPS	DESCRIPTION	86.40.00	86-32
SLIDING ROOF MOTOR	RENEW	86.76.01	86-57
SLIDING ROOF MOTOR LIMIT SWITCH	RENEW	86.76.06	86-58
SLIDING ROOF MOTOR SWITCH	RENEW	86.76.05	86-58
SPEEDOMETER ILLUMINATION BULB	RENEW	86.45.49	86-41
SPORT MODE INDICATOR BULB	RENEW	86.45.90	86-50
STARTER CIRCUIT	DESCRIPTION	86.60.00	86-63
STARTER MOTOR	RENEW	86.60.01	86-64
STARTER MOTOR LINK LEAD	RENEW	86.70.31	86-86
STARTER TO ALTERNATOR LINK LEAD	RENEW	86.70.36	86-88
STEERING COLUMN HARNESS	RENEW	86.70.34	**86-87**
STOP LAMP SWITCH	RENEW	86.65.51	86-65
SUNROOF AND WINDOWS	DESCRIPTION	86.25.00	86-21
SWITCH PANEL ILLUMINATION BULB	RENEW	86.45.36	86-40
SYMBOLS		86.00.00	86-13
TACHOMETER ILLUMINATION BULB	RENEW	86.45.53	86-42
TAIL. STOP. FLASHER AND REVERSE BULB	RENEW	86.40.73	86-33
TAIL. STOP, FLASHER & REVERSE BULB HOLDER	RENEW	86.40.67	86-33
TAIL. STOP. FLASHER & REVERSE LAMP LENS	RENEW	86.40.72	86-33
TEMPERATURE GAUGE ILLUMINATION BULB	RENEW	86.45.51	86-43
TRIP COMPUTER	DESCRIPTION	86.80.00	86-52
TRIP COMPUTER ILLUMINATION BULB	RENEW	86.45.21	86-39
TRIP COMPUTER & CRUISE LOGIC MODULE	RENEW	86.80.01	86-53
WIPE/WASH WARNING INDICATOR BULB	RENEW	86.45.86	86-48
WIPER LOGIC MODULE	RENEW	86.80.11	86-55

RESERVED FOR ILLUSTRATED INDEX

RESERVED FOR ILLUSTRATED INDEX

RESERVED FOR ILLUSTRATED INDEX

RESERVED FOR ILLUSTRATED INDEX **KEY**

RESERVED FOR ILLUSTRATED INDEX

RESERVED FOR ILLUSTRATED INDEX

RESERVED FOR ILLUSTRATED INDEX

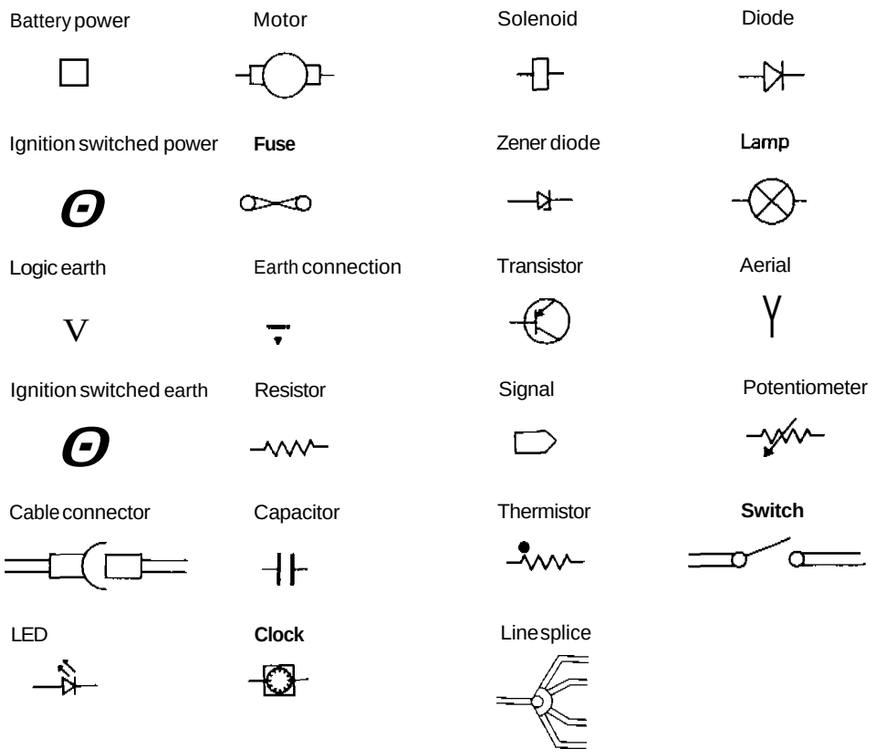
RESERVED FOR ILLUSTRATED INDEX KEY

BULB CHART

DESCRIPTION	CAPACITY	TYPE	PART NO
HEADLAMP FRANCE ONLY INNER	12V 55w	HALOGEN YELLOW 476	JLM9599
FRANCE ONLY OUTER	12V 60/55W	HALOGEN YELLOW 476	JLM9599
USA AND CANADA INNER	12V 50W	SEALED BEAM	
USA AND CANADA OUTER	12V 35/35	SEALED BEAM	
JAPAN ONLY INNER	12v 5ow	SEALED BEAM	
JAPAN ONLY OUTER	12V*/60W	SEALED BEAM	
R.O.W INNER	12w 55w	HALOGEN 472	JLM9598
R.O.W OUTER	12V 60/55W	HALOGEN 472	LLM9598
FRONT FLASHER & SIDE LAMP CANADA AND USA	12V 5/21W	DOUBLE FILAMENT 380	JLM9598
R.O.W SIDE LAMP	12V 5W	REGULAR 207	JLM9587
R.O.W FLASHER LAMP	12V 21W	REGULAR 382	C9126
FOG LAMPS FRONT	12v 55w	HALOGEN 479	
REAR	12V 21W	REGULAR 382	C9126
UNDERBONNET LAMP	12V 5W	REGULAR 989	JLM9601
SIDEMARKER LAMP USA AND CANADA	12V 4W	REGULAR 233	JLM9589
SIDE REPEATER LAMP	12V 4W	REGULAR 233	JLM9589
DOOR HAZARD LAMP	12V 5W	FESTOON 239	JLM9590
INSTRUMENT ILLUMINATION	12v 2.2W	CAPLESS	JLM646
GEAR SELECTOR ILLUMINATION	12V 1.2W	CAPLESS 286	C38966
CUBBY BOX LAMP	12V 5W	FESTOON 239	JLM9590
CIGAR LIGHTER ILLUMINATION	12V 1.2W	CAPLESS 286	C3896
ROOF CONSOLE MAP LAMP	12V 5W	HALOGEN	
ROOF CONSOLE COURTESY LAMP	12V 10W	FESTOON	
INTERIOR LAMP SEAT HEADREST	12V 5W	FESTOON 286	JLM9590
REAR QUARTER LAMP	12V 4W	REGULAR 233	JLM9589
HIGH MOUNTED STOP LAMP	12v 5W	CAPLESS 501	JLM9600
LUGGAGE COMPARTMENT LAMP	12V 5W	FESTOON 239	JLM959
STOP LAMP	12V 21W	REGULAR 382	C9126
REVERSE LAMP	12V 21W	REGULAR 382	C9126
REAR FLASHER LAMP	12V 21W	REGULAR 382	c912
TAIL LAMP	12V 5W	REGULAR 207	JLM9587
NUMBER PLATE LAMP JAPAN	12V 10W	FESTOON 265	JLM9591
NUMBER PLATE LAMP R.O.W	12v 5W	FESTOON 239	JLM9590

0229d

SYMBOLS



LOGIC EARTH DISTRIBUTION

Logic earths are distributed from power earth point B78 located close to the CPU.

IGNITION SWITCHED EARTH DISTRIBUTION

Ignition switched earths are distributed from the ignition and inertia switches. The ignition switch distributes the earths .in all switch position except OFF, and the inertia switch distributes the earths when tripped with the ignition ON.

3001B

WARNING

The battery emits combustible gas (Hydrogen) particularly when charging. Avoid sparks and short circuits by switching off the charging current before making or breaking the terminal connections. When disconnecting the battery connections, always disconnect the earth terminal first and reconnect it last.

Avoid contact with the battery acid which is both poisonous and corrosive. Acid will cause burns to the skin as well as to the eyes. In the event of skin or eye contamination, drench the effected area with water and seek urgent medical attention when eye contact has occured.

Fuel is extremely flamable. All fire precautions must be observed, therefore, when working on the fuel devices of the Engine Management system.

CAUTION

Never reverse the battery terminal connections and always disconnect both terminals before battery charging or using arc welding equipment on the vehicle.

3001B

CONTROL SYSTEM

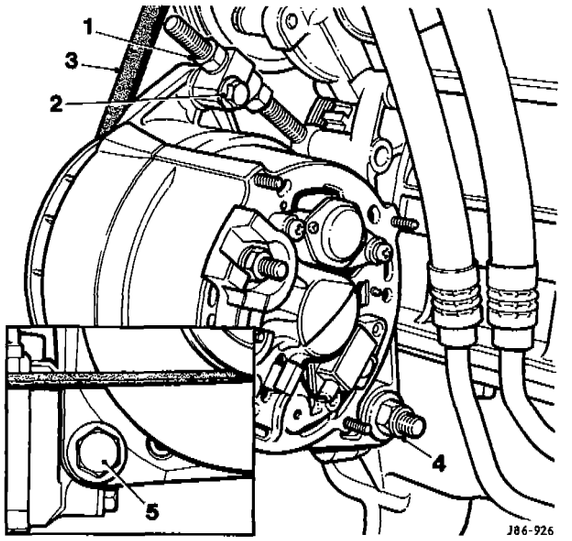
DESCRIPTION 86.80.00

The Control System contains a Central Processing Unit (CPU) which processes data on switched input lines to provide control of the following functions:

Direction and hazard indication.
Windscreen wash/wipe.
Headlamp wash.
Interior lights.
Instrument lights
Seat heaters (Where fitted)
Rear backlight and door mirror heaters.
Centralised locking.
Aerial extend/retract.
Audible warnings.

The CPU is of modular construction and is attached to the bulkhead on the passenger side.

ALTERNATOR



RENEW 86.10.02

Open the bonnet and disconnect the battery earth lead.
Remove the air cleaner element for access.
Undo the alternator link arm adjusting nut (1 Fig 1).
Loosen but do not remove the alternator link arm trunnion bolt (2 Fig 1).
Loosen the link arm pivot bolt and pivot the alternator towards the engine.
Remove the drive belt (3 Fig 1) from the alternator pulley.
Remove the trunnion bolt.
From beneath the vehicle displace the rubber boots from the alternator cable connectors.
Note and disconnect the cables from the alternator.
Remove the alternator pivot nut (4 Fig 1) and bolt (5 Fig 1).
Displace the alternator from the bracket and remove the spacer washer.
From above lift and remove the alternator from its location.

On refitting ensure that the drive belt is adjusted to the correct tension. A load of **1.5 kg** must **give** a total belt deflection of **4.5** mm when applied at the mid point of the belt.

DATA

SPECIFICATION

Type	Bosch N1 14V A0/115
Voltage	12volts
Maximum rev/min	**17500**
Maximum output	115 amps
Regulated voltage	**13.6-14.4**

TORQUE FIGURES

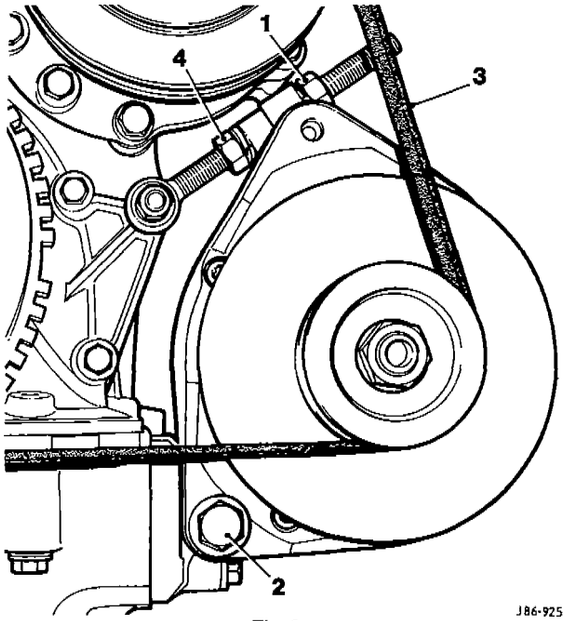
Through bolts 4.5 – 6.2 Nm
Pulley shaft nut ***27.2 – 35.0 Nm***
Rectifer bolts 3.4 – 3.96 Nm
Bearing plate screws 4.7 – 5.7 Nm
Main terminal nut 3.96 – 5.08 Nm

3001B

ALTERNATOR DRIVE BELT

RENEW AND ADJUST 86.10.03

Loosen the pivot bolts securing the air conditioning compressor.
Loosen the adjusting link securing bolt and trunnion block bolt.
Loosen the adjusting link locknut (1 Fig 1) and adjust the compressor towards the engine until compressor drive belt (3 Fig 1) can be removed.
Loosen the alternator pivot nut and bolt (2 Fig 1).
Loosen the adjusting link pivot bolt and the trunnion block bolt.
Loosen the adjusting link locknut (4 Fig 1) and adjust the alternator towards the engine by means of the adjusting nut
Remove the trunnion block bolt and push the alternator towards the engine until the drive belt can be removed from the pullies.



J86-925
Fig 1

On fitting the new belt ensure that the drive belt is adjusted to the correct tension. A load of 1.5 kg must give a total belt deflection of 4.5 mm when applied at the mid point of the belt.

30018

ALTERNATOR DUMP MODULE

RENEW 86.10.06

Open the bonnet and disconnect the battery earth lead.
Remove the air cleaner assembly.
Remove the screws, nuts and washers securing the module.
Disconnect the cable to the alternator, the earth lead and the multi-plug cable connector.
Remove the module.

Fitting a new module is the reversal of the above procedure ensuring all the electrical connections are clean and secure.

3001B

BATTERY

DESCRIPTION 86.15.00

The declaration of the battery capacity in ampere hours by battery manufacturers is now optional and a more realistic method of declaring the characteristics of a battery is by quoting the RAPID DISCHARGE CURRENT and the RESERVE CAPACITY. A battery user will find information about how long a battery will sustain the maximum electrical load in the event of an alternator failure, and about the battery's cold start performance is of much greater use than details of battery capacity at the 10 or 20 hour rate.

Cranking Performance:

This is the assessed performance of the battery under simulated load conditions. The cranking current is the current the battery will deliver at the initial temperature of minus 18°C which enables a minimum voltage of 7.2 volts to be obtained at the battery terminals for 30 seconds. (SAE standard).

Reserve Capacity:

This is the period during which the battery can supply a constant current of 25 amps down to a voltage of 1.75 volts per cell at a temperature of 25°C. The current is based on a typical total electrical load of a vehicle such as would be carried by the battery under adverse driving conditions in the event of the failure of the vehicle charging system. The time is usually stated in minutes.
Topping-up should be carried out when the electrolyte falls below the top of the separators.
The vent covers should be left in position at all times, except during the topping-up procedure.
When battery charging is carried out, the vent covers should be left in position to allow gas to escape or flooding of electrolyte may result. Also it is advisable to disconnect the battery from the vehicle.

440 Series Battery.

The rapid discharge current = 420 amps at -18°C.
The reserve capacity time = 75 minutes at 25 amps.
The rapid discharge voltage = 9.0 volts.

HEALTH AND SAFETY PRECAUTIONS

No smoking.
Avoid sparks, short circuits or other sources of ignition.
Hydrogen, which is highly explosive, is emitted particularly during charging.
Switch off current before making or breaking electrical connections.
Always disconnect the earth terminal first and reconnect it last.
Charge the battery in a well ventilated area.

Avoid contact with battery acid
Battery acid is poisonous and corrosive, it will cause burns to the skin as well as to the eyes.
In the event of skin or eye contact drench the effected area with water and in the case of eye contact seek urgent medical attention.

3001B

BATTERY HEAVY DISCHARGE

TEST 86.15.02

This test ensures that the battery is capable of supplying the heavy currents required by the starter motor at the moment of starting the engine
A heavy discharge tester should be applied to the battery terminals with the red lead to the positive terminal and the black lead to the negative terminal.
The tester should be set for the ammeter to indicate a discharge of approximately 300 amps (New Battery) 210 amps (Service Battery) for 15 seconds. Observe the voltmeter during the battery discharge. If the voltmeter reading is 9.6 volts or above the battery can be considered serviceable.
Should the voltage fall below the specified 9.6 volts recharge the battery and retest.

OPEN CIRCUIT VOLTAGE	NEW BATTERY TEST CURRENT	SERVICE BATTERY
12.60 and above	260 amps	180 amps
12.45 to 12.59	210 amps	130 amps
12.21 to 12.44	110 amps	85 amps
12.20 and below	The battery must be charged before being tested.	

DEGREES C	DEGREES F	MINIMUM ACCEPTANCE VOLTAGE
21	70 and above	9.6
15	60	9.5
10	50	9.4
4	40	9.3
0	30	9.1
-7	20	8.9
-12	10	8.7
-18	0	8.5

If the voltage is 9.6 or above at room temperature ie. 20°C or above throughout the 15 second test period then the battery is serviceable.

3001B

If the electrolyte is observed to boil in one of the cells during the discharge period the battery can be considered unserviceable as shorting is taking place between the cell separator plates.
Sulphation is a condition which occurs when a battery remains in a discharged state for a period of time. It is not readily distinquishable from a battery which has been recently discharged. Charging may or may not recover the battery, but the test procedure will determine whether it is serviceable or not.

Specific Gravity Test
The electrolyte consists of a mixture of sulphuric acid and water in given proportions.
The electrolyte becomes weaker as the cell discharges and this weakening effect is directly proportional to the amount of electricity given up by the cell. Therefore the specific gravity of the electrolyte gives a direct indication of the condition of the battery.
When a tube of a hydrometer is inserted into the electrolyte and the rubber bulb is pressed and released a small quantity of electrolyte is drawn up into the hydrometer. The specific gravity of the electrolyte determines the level of the float in the liquid. With the float in a high position the specific gravity is high. If the specific gravity is low the float sinks to a lower position.
The specific gravity readings are taken when the liquid level crosses the scale on the float and this gives an accurate indication of the state of charge of the battery.
The volume of electrolyte and hence its specific gravity varies with temperature

Electrolyte Temperature Correction

For every **10°C** below **15°C** subtract 0.007 from the hydrometer reading and for every **10°C** above **15°C** add **0.007** to the hydrometer reading.

Specific Gravity

Specific gravity	**F°**	**C°**
1.2595	104	**40**
I.263	**95**	**35**
1.2675	**86**	**30**
1.270	**78**	**25**
1.2735	**68**	**20**
1.277	**59**	**15**
1.2805	**50**	**10**
1.284	**41**	**5**
1.2875	**32**	**0**

Example

Specific gravity reading = **1.250**
The temperature = 5°C
The equivalent specific gravity at **15°C**
= **1.250** - **0.007** = **1.243**

3001B

BATTERY

RENEW **86.15.01**

Health and Safety precautions

No smoking
Avoid sparks, short circuits or other sources of ignition.
Hydrogen, which is highly explosive, is emitted particularly during charging.
Switch off current before making or breaking electrical connections.
Always disconnect the earth terminal first and reconnect it last.
Charge the battery in a well ventilated area.

Avoid contact with battery acid
Battery acid is poisonous and corrosive, it will cause burns to the skin as well as to the eyes.
In the event of skin or eye contact drench the effected area with water and in the case of eye contact seek urgent medical attention.

Open the car bonnet
Displace the cover from the negative terminal and loosen the bolt securing the terminal.
Disconnect the terminal from the battery terminal post.
Displace the cover from the positive terminal and loosen the bolt securing the terminal.
Disconnect the terminal from the battery terminal post.
Remove the bolts securing the battery clamp plate.
Remove the clamp plate.
Ensure the battery is kept in an upright position as it is being removed.

Fitting a new battery is the reversal of the above procedure.
Ensure the terminals are clean and tight.
Connect the positive terminal then connect the negative terminal ensuring correct connection are made.
Ensure the battery clamp is not over tightened.

3001B

BATTERY NEGATIVE LEAD

RENEW **86.15.19**
86.15.17

Note:- Should the positive lead only need renewing always disconnect the negative terminal first.

Displace the cover from the negative terminal and loosen the nut securing the terminal
Remove the terminal from the battery terminal post.
Remove the nut securing the cable clamp and remove the clamp.
From beneath the vehicle remove the bolt securing the lead to the bell housing and remove the lead.

Displace the cover from the positive terminal and loosen the nut securing the terminal
Remove the terminal from the battery terminal post.
Reposition the rubber boot cover from the body terminal stud, remove the nut securing the lead to the stud and remove the lead.

Fitting the new leads is the reversal of the above procedure.

3001B

BATTERY

POWER DISTRIBUTION 86.15.00

Fused and unfused battery power is distributed from the " A post fuseblocks and terminal posts located behind the console on the right and left sides of the engine compartment bulkhead.
Each 'A post fuseblock contains two vertical banks of seven fuses, each bank being identified 1 to 7 and 8 to 14 in descending order on the left and right respectively. Fuse ratings and the circuits are detailed at the front of this Section.

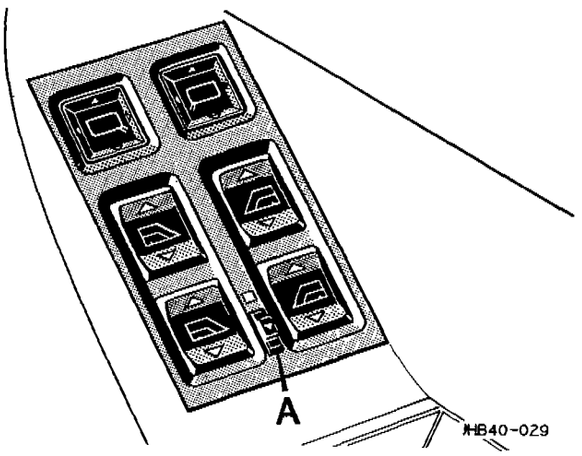


Fig 1

0022C

SUNROOF AND WINDOWS

DESCRIPTION 86.25.00

The sunroof (if fitted) and windows are driven by motors actuated, via relays, by two-way rocker switches located on door (Fig 1) and sunroof (A,B Fig 2) switch panels. Each window can be raised and lowered independantly from its respective switch panel or from the driver switch panel which also contains passenger window override and isolate switches (A Fig 1). A central locking function also raises each window and closes the sunroof in response to front door key and central locking switches.
The sunroof is operational at all times that the battery is connected, but window operation is permitted only when the ignition switch is set to ON or AUXILIARY.

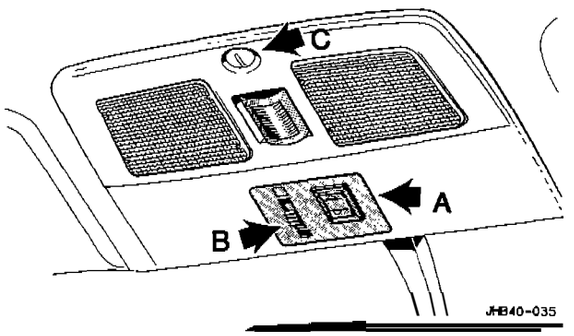


Fig 2

The sunroof and each window circuit contains two relays; one relay for the open function, and the other for the close function. Each relay is supplied with battery power which is routed to the motor when the relay is energised, the other relay completing the motor circuit to earth.

The sunroof circuit also contains a limit override switch which permits sunroof travel to the fully open position when its contacts are closed. When the override switch contacts are open, sunroof travel is limited to a position determined by a reed switch attached to the sunroof transport.

FRONT DOOR WINDOW SWITCH (DRIVERS SIDE)

RENEW **86.25.03**

Open the bonnet and disconnect the battery earth lead.
Open the car door
Remove the veneer trim pad 76.47.11
Remove the upper trim pad 76.34.02
Remove the lower trim pad 76.34.03
Remove the front armrest 76.34.22
Remove the screws securing the switch retaining bracket and remove the bracket (1 Fig 1).
Disconnect the door guard block connectors.
Remove the switch assembly (Fig 2).

Fitting a new switch is the reversal of the removal proecedure.

3001B

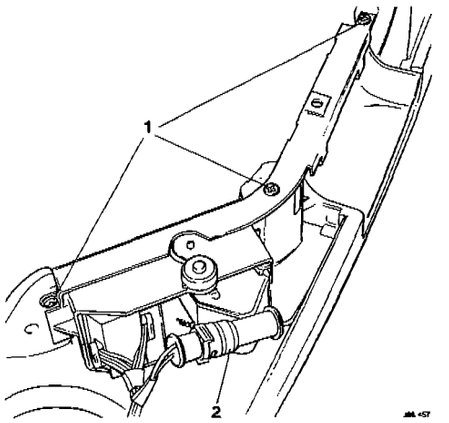


Fig 1

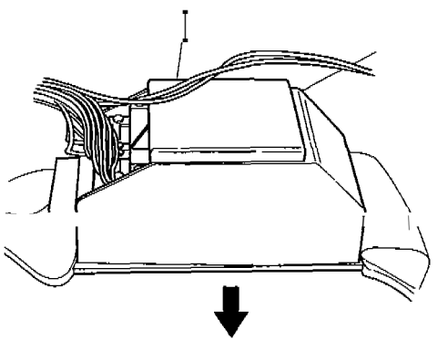


Fig 2

FRONT DOOR WINDOW LIFT MOTOR

RENEW **86.25.04**

Open the bonnet and disconnect the battery earth lead.
Remove the veneer panel 76.47.11
Remove the upper trim pad 76.34.02
Remove the lower trim pad 76.34.03
Fit tape over the door glass and frame to secure the glass (Fig 3).
Remove the screws securing the window lift motor assembly to the door panel.
Remove the rubber cover from the window lift guide securing screws and remove the screws.
Displace the block connector blanking plate from the door for access.
Cut and remove the ratchet strap securing the block connector.
Disconnect the cable harness block connector.
Displace the window lift motor from the glass and lower the window lift motor assembly into the bottom of the door.
Remove the window lift motor assembly from the door (Fig 4).

Fitting a new motor assembly is the reversal of the removal procedure.

3001B

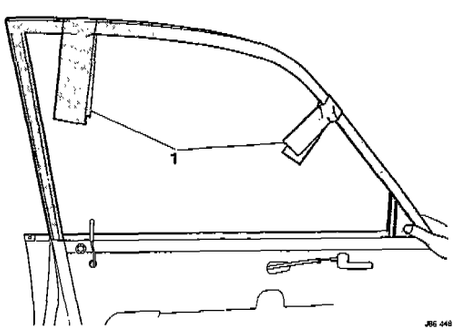


Fig 3

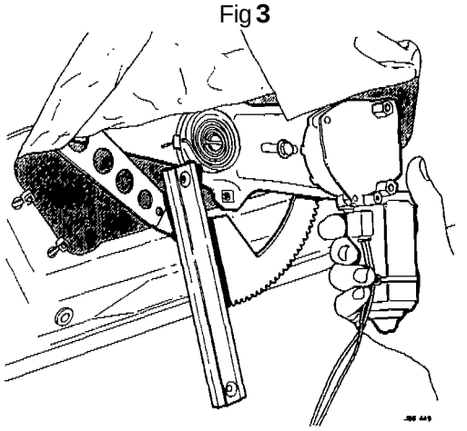


Fig 4

FRONT DOOR WINDOW LIFT SWITCH

RENEW **86.25.06**

Open the bonnet and disconnect the battery earth lead.
Remove the veneer panel 76.47.11
Remove the upper trim pad 76.34.02
Remove the lower trim pad 76.34.03
Remove the armrest 76.34.22
Remove the screws securing the switch retaining bracket and remove the bracket.
Disconnect the door guard block connectors.
Remove the switch/ashtray assembly.
Displace the switch asemmbly from the housing and carefully release the locking tabs **to** remove the switch.

Fitting a new switch is the reversal of the. removal procedure. Ensure all the electrical connections are clean and tight.

3001B

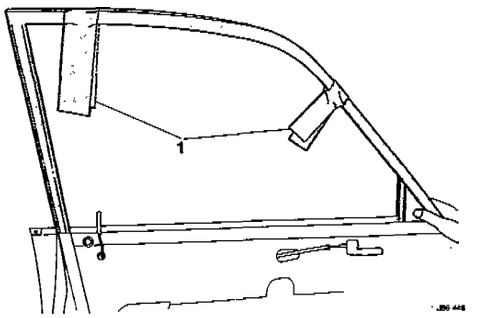


Fig 1

REAR WINDOW LIFT MOTOR

RENEW **86.25.09**

Open the bonnet and disconnect the battery earth lead.
Remove the veneer panel 76.47.12
Remove the upper trim pad 76.34.05
Remove the lower trim pad 76.34.06
Fit tape over the door glass and frame (Fig 1) to secure the glass.
Cut and remove the ratchet strap securing the block connector.
Disconnect the cable harness block connector.
Remove the screws securing the window lift motor assembly to the door panel.
Remove the rubber cover from the window lift guide securing screws and remove the screws.
Remove the rubber cover from the window lift guide securing screws and remove the screws.
Displace the window lift motor from the glass and lower the window lift motor assembly into the bottom of the door.
Remove the window lift motor (Fig 2) assembly from the door.

Fitting a new motor assembly is the reversal of the removal procedure.

3001B

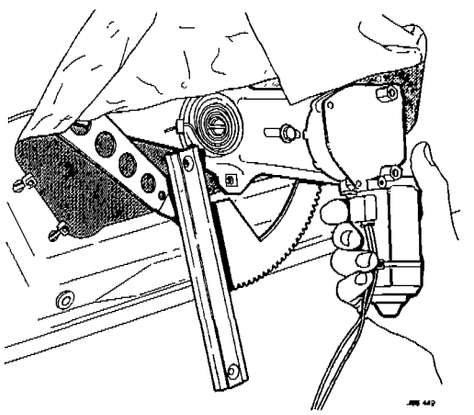


Fig 2

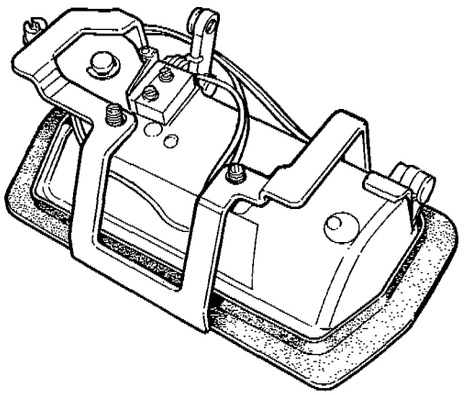
REAR DOOR WINDOW LIFT SWITCH

RENEW **86.25.10**

Open the bonnet and disconnect the battery earth lead.
Remove the veneer panel 76.47.12
Remove the upper trim pad 76.34.05
Remove the lower trim pad 76.34.06
Remove rhe arm rest 76.34.23
Remove the screws securing the switch retaining bracket and remove the bracket.
Disconnect the door guard block connectors.
Remove the switch/ashtray assembly.
Displace the switch assembly from the housing and carefully release the locking tabs to remove the switch.

Fitting a new switch is the reversal of the removal procedure.

3001B



J86 921

Fig 1

DOOR LOCK SOLENOID MICRO-SWITCH

RENEW **86.25.44**

Open the bonnet and disconnect the battery earth lead.
Remove the veneer panel 76.47.11
Remove the upper trim **pad** 76.34.02
Remove the lower trim pad 76.34.03
Remove the door handle 76.58.01
Remove the cable harness tapes.
Remove the screws (Fig 1) securing the switch.
Remove the roller bracket.
Remove the switch complete with harness.

Fitting a new switch is the reversal of the removal procedure

3001B

DOOR, BOOT AND FUEL FILLER LOCKS

DESCRIPTION **86.25.00**

Two methods of door and boot lock operation exist: mechanical operation by means of a plunger located on each door sill, and electrical operation by means of motors installed in the doors and boot. Mechanical operation of the boot lock is by means of a key operated mechanism also incorporated at both the driver and front passenger doors.

Each door plunger is connected to its respective lock mechanism by a linkage which sets the mechanism to the desired condition. The front door plungers can be operated with the doors open or closed, but in the open position the external door handle must first be raised. Driver and front passenger door plunger movement also operates a microswitch which, via a door lock module, operates the boot and remaining door locks.
A safety feature, operated by the inertia switch, unlocks all the doors and locks the boot **and** fuel filler should the vehicle be involved in a front or rear collision.
Each lock can also be locked, via the door lock module, by a central locking function under CPU control, it is operated by front door key or central locking switches.

3001B

DRIVERS DOOR LOCK MOTOR

RENEW **86.25.45**

Open the bonnet and disconnect the battery earth lead.
Remove the veneer panel 76.47.11
Remove the upper trim pad 76.34.02
Remove the lower trim pad 76.34.03
Remove the door lock 76.37.12
Cut and remove the rachet strap securing the lock harness to switch harness.
Remove the screws securing the lock motor to the door lock (1 Fig 1).
Remove the lock motor from the lock assembly (2 Fig 1).
Fitting a new lock motor is the reversal of the removal procedure

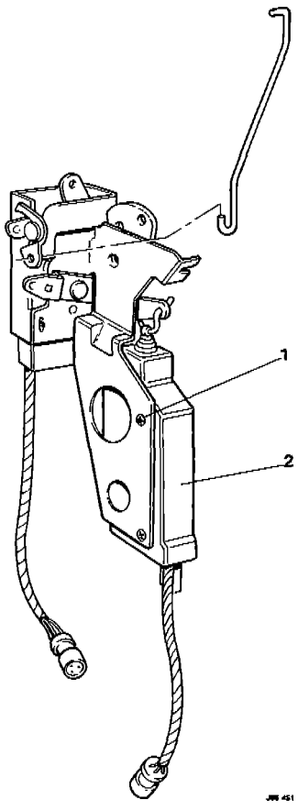


Fig 1

3001B

REAR DOOR LOCK MOTOR

RENEW **86.25.47**

Open the bonnet and disconnect the battery earth lead.
Remove the veneer panel 76.47.12
Remove the upper trim pad 76.34.05
Remove the lower trim pad 76.34.06
Remove the door handle 76.37.02
Remove the door lock 76.37.13
Cut and remove the rachet strap securing the lock harness to switch harness.
Remove the screws securing the lock motor to the door lock.
Remove the lock motor from the lock assembly

Fitting a new lock motor is the reversal of the removal procedure

3001B

LUGGAGE COMPARTMENT LOCK MOTOR

RENEW 86.25.49

Open the bonnet and disconnect the battery earth lead.
Open the luggage compartment.
Remove the bolts securing the lock mechanism.
Displace the lock linkage retaining clip and disconnect the linkage (2 Fig 1).
Displace the lock mechanism.
Disconnect the cable harness black connector (3 Fig 1).
Remove the assembly.
Displace the peg (4 Fig 1) retaining the lock barrel and remove the barrel.

Fitting a new lock assembly is the reversal of the removal procedure.

3001B

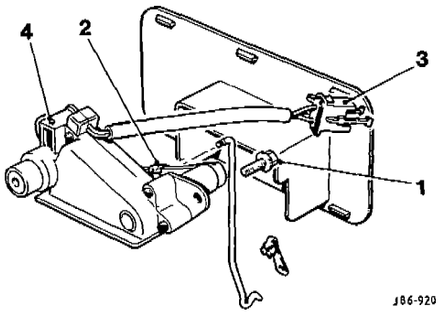


fig 1

HORNS

DESCRIPTION 86.30.00

Twin horns are fitted, mounted on the front lower cross-member behind the front bumper.
The horns are operational when the battery is connected, power being supplied to a horn relay which is energised by a logic earth when the horn push is pressed. When energised, battery power is applied to the horns through the relay contacts.

30018

HORNS

RENEW 86.30.09

Open the bonnet and disconnect the battery earth lead.
Remove the radiator grilles 76.55.07.
Remove the screws securing the horn bracket.
Disconnect the electrical cables and remove the horns..
Fitting new horns is the reversal of the removal procedure.

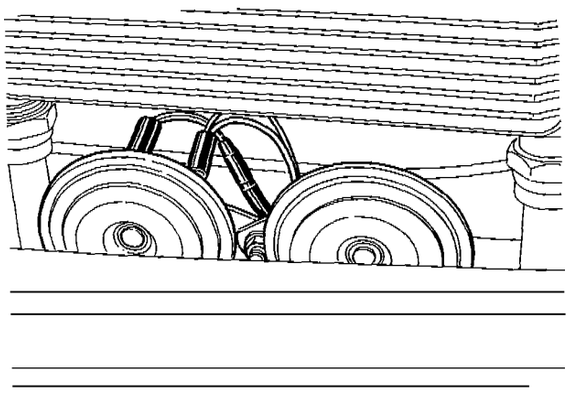


Fig 2

30018

EXTERIOR LIGHTS

DESCRPTION 86.40.00

All exterior lights are operated via relays within bulb fail modules. These relays, which are wire linked to suit the vehicle in which the module is installed, are controlled via a lighting logic module which implements functions selected on master, fog and main/dip beam lighting switches.
Circuits within the logic module perform the following control functions:

Headlight operation only when the ignition is switched is ON.
Initiate headlight operation in dip beam mode.
Select main/dip beam switch mode of operation, i.e. headlight flash or main/dip beam select, dependent on the position of the master lighting switch.
provide inputs to both the CPU and the instrument pack to facilitate headlamp wash and main beam indicator operation.
Headlight operation is by switching the master lighting switch to HEADLIGHTS. This applies a logic earth to the lighting logic module which, via B49-11 and 5, energises relays that route battery power through the bulb fail modules to the dip beam filaments. A signal is also applied, to the CPU which permits headlamp wash operation.
Upward movement of the main/dip beam stalk, applies a logic earth to the lighting logic module. The logic module responds to this input as follows:
Energises, through, relays within the bulb fail modules which route battery power to the main beam filaments. This occurs each time the stalk is operated with the master lighting switch set to OFF or SIDELIGHT.
Energises, through, either main or dip beam relays within the bulb fail modules which route battery power to the lamp assembly main or dip beam filaments. Main and dip selection occurs on alternate stalk operations with the master lighting switch set to HEADLIGHT.
Initiates, main beam indicator illumination by applying a logic earth to the instrument pack each time the main beam relays are energised.

3001B

HEADLAMP ASSEMBLY (Lefthand)

RENEW **86.40.06**

Open the bonnet and disconnect the battery earth lead.
Remove the radiator grilles 76.55.07.
Remove the nuts and washers securing the rear of headlamp assembly.
Remove the lower bolt securing the headlamp assembly and earth leads.
Remove the earth leads from the bolt,
Disconnect the headlamp multi-plug cable connectors and remove the headlamp assembly (Fig 1).

Fitting a new headlamp assembly is the reversal of the removal procedure.

3001E

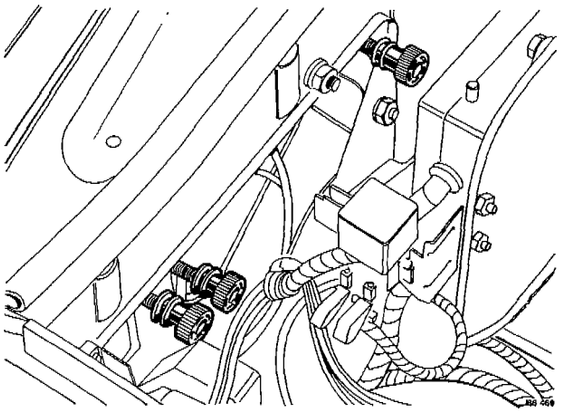


Fig 1

HEADLAMP ASSEMBLY (Righthand)

RENEW **86.40.07**

Open the bonnet and disconnect the battery earth lead.
Remove the radiator grilles 76.55.07.
Displace the relays from the mounting brackets.
Remove the headlamp securing nuts.
Remove the lower securing bolt and remove the earth leads from the bolt.
Reposition the headlamp forward and disconnect the multi-plug cable connectors then remove the headlamp assembly.
Fitting a new headlamp assembly is the reversal of the removal procedure.

3001B

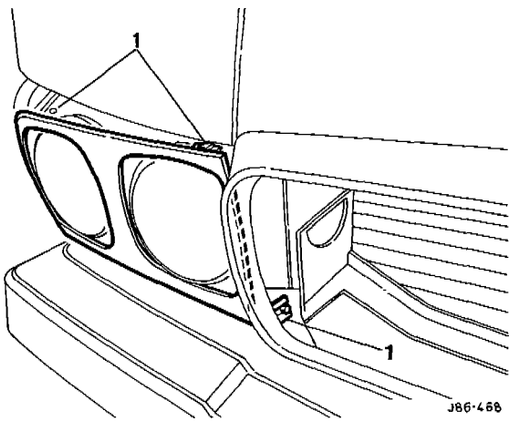


Fig 1

HEADLAMP LIGHT UNIT

RENEW **86.41.26**

Open the bonnet and disconnect the battery earth lead.
Remove the screws securing the radiator grille and remove the grille.
Loosen the nuts securing the radiator grille surround and displace the surround outwards.
Remove the screws securing the headlamp rim finisher and remove the finisher (1 Fig 1).
Slacken the light unit rim securing screws (1 Fig 2).
Turn and remove the rim (2 Fig 2).
Displace the light unit.
Disconnect the block connector and remove the light unit.

Fitting a new unit is the reversal to the above procedure.

30018

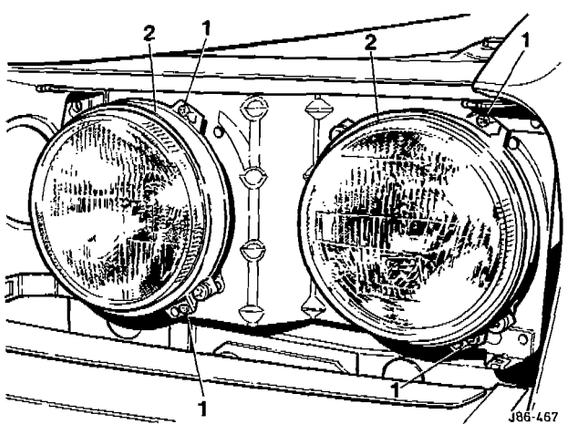


Fig 2

DIRECTION AND HAZARD INDICATION

DESCRIPTION 86.40.00

The direction indicators are operational with the ignition on and movement of the direction indicator stalk, located on the left-hand side of the steering column.
The indicators, under CPU control operate at a flash rate of 80 per minute, with a visible and audible warning in time with the indicator flash rate. Should an indicator bulb fail the visible and audible warning frequency will increase to 160 per minute whilst the external flash frequency will remain at 80 per minute.
Cancelling is achieved automically by turning the steering wheel or moving the stalk in the opposite direction to that selected.

Hazard warning is operational with the ignition switched off or on by depressing the hazard warning switch located on the left hand side of the steering column. This will cause all the direction indicators, the warning lamp in the switch and the audible warning to operate in unison.
Should an indicator bulb fail the visible and audble warning frequency will increase to 160 per minute whilst the external flash frequency will remain at 80 per minute but only if the ignition is switched "ON".
Operation of the direction indicator stalk applies a logic earth, to the CPU which energises relays within the relay/bulb fail modules. The relays are energised for periods of 1.5 seconds at 1.5 second intervals and both visible and audible warnings are in unison with the relay operation provided that the bulbs on the selected side are intact. The visible warning signals are applied to the instrument pack and the audible warning signal is applied to an audible warning module.
In the event of a bulb failure, the associated lamp relay/bulb fail module generates a "DI bulb fail" signal which is applied to the CPU. On receiving the "DI bulb fail" signal, the CPU increases the frequency of both visible and audible warning signals to 160 outputs per minute and initiates a "DI bulb fail" indication on the instrument pack through RB/LB14-14.
Operation of the hazard warning switch applies a logic earth, via RB/LB49-15, to the CPU which responds in a similar manner to that of the direction indicator function previously described.

3001E

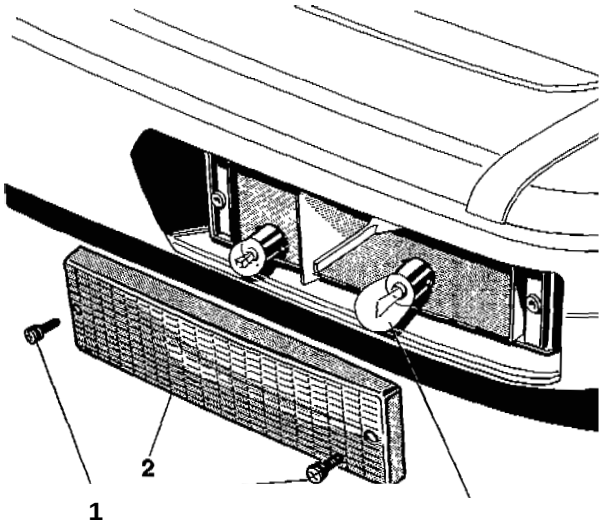
FRONT FLASHER LAMP

RENEW **86.40.39**

Open the bonnet and disconnect the battery earth lead.
Carefully displace the lamp assembly from its retaining clips.
Disconnect the multi-plug cable connector and remove the lamp assembly.

Fitting a new lamp is the reversal of the removal precedure.

30018



J86 470

Fig 1

FRONT FLASHER LAMP LENS

RENEW **86.40.40**

Open the bonnet and disconnect the battery earth lead.
Remove the screws (1 Fig 1) securing the flasher lamp lens and remove the lens (2 **Fig** 1).

Fitting a new lens is the reversal of the removal procedure.

30018

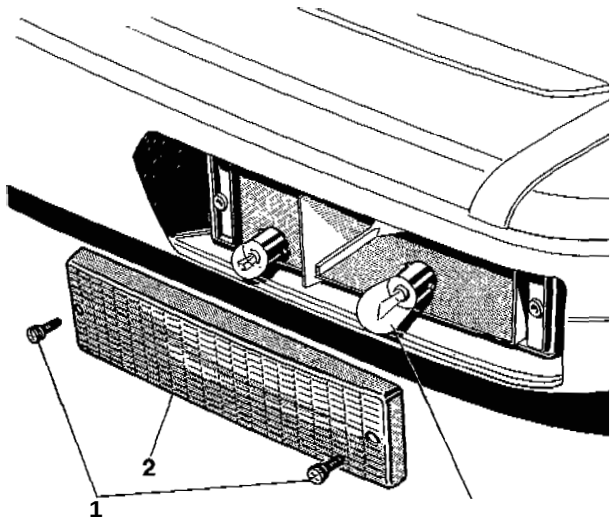
FRONT FLASHER LAMP BULB

RENEW **86.40.41**

Open the bonnet and disconnect the battery earth lead.
Remove the screws (1 **Fig** 2) securing the flasher lamp lens (2 **Fig** 2) and remove the lens (3 Fig 2).
Press, turn and remove the bulb.

Fitting a new bulb is the reversal of the removal procedure.

3001B



J86 470

Fig 2

FRONT REPEATER LAMP ASSEMBLY

RENEW **86.40.53**

Open the bonnet and disconnect the battery earth lead.
Disconnect the repeater lamp cable harness multi-plug connector.
Displace the body grommet into the inner wing.
Remove the road wheel.
Remove the screws securing the inner wing arch liner and remove the liner.
Peel back the repeater lamp insulator sleeve.
Remove the repeater lamp from the wing.
Carefully displace the adhesive pad and withdraw the cable harness.

Fitting a new lamp is the reversal of the removal procedure ensuring the wing aperture is clean.

0030d

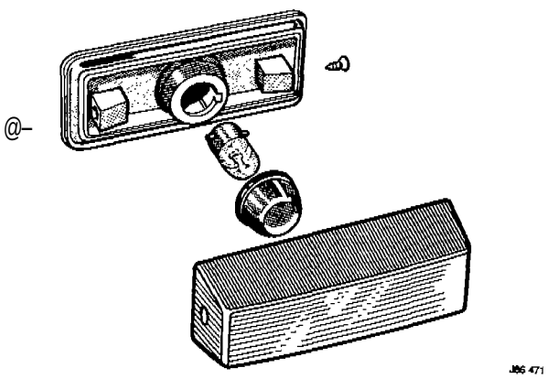


Fig 1

REPEATER LAMP LENS AND BULB

RENEW **86.40.51**

Remove the screws securing the lens and remove the lens (Fig 1).
Remove the bulb filter cover from the retaining clips and remove the bulb.

To fit a new bulb or a new lens reverse the above procedure.

30016

REAR SIDE MARKER LAMP

RENEW **86.40.64**

Open the bonnet and remove the battery earth lead.
Open the luggage compartment.
Remove the spare wheel 74.20.00
Remove the fuel tank trim panel.
Remove the rear lamp trim panel.
Remove the side trim panel.
Disconnect the cable harness multi-plug connector at the bulb failure module.
Displace the carpet and displace the the body grommet.
Release the spring clips securing the marker lamp and remove the lamp complete with cable.

Fitting a new lamp is the reversal of the removal procedure.

30016

REAR SIDE MARKER LAMP BULB.

RENEW 86.40.62

Remove the screws securing the marker lamp lens and remove the lens.
Remove the bulb.

Fit a new bulb and refit the lens.

3001B

SIDE, STOP, REVERSE AND NUMBER PLATE LAMPS

DESCRIPTION 86.40.00

The vehicle side and number plate lamps are operated with the ignition switched off, through an auxiliary sidelamp relay. The stop and reverse lamps, however, are operated by footbrake and gear selector switches which energise stop and reverse relays in the rear bulb fail modules.

3001B

SIDE, STOP, REVERSE AND NUMBER PLATE LAMPS

OPERATION 86.40.00

Sidelamp operation is selected by setting the master lighting switch to SIDELIGHTS.
This connects a logic earth to the lighting logic module which energises the auxiliary sidelight relay and sends a signal to the CPU. Side, tail, number plate and side marker relays are also energised, which route battery power to respective lamp filaments through the bulb fail modules. The "SideLAMP" signal is used to control the instrument illumination intensity.
Operation of the vehicle footbrake actuates the footbrake switch which, energises stop relays which route battery power through the rear bulb fail modules to the stop lamp filaments. Similarly, movement of the gear selector to reverse actuates the reverse switch which, energises relays which route battery power to the reverse lamp filaments.

3001E

TAIL, STOP, FLASHER AND REVERSE LAMP BULB HOLDER

RENEW **86.40.67**

Open the bonnet and remove the battery earth lead.
Open the luggage compartment.
Remove the lamp interior trim finisher (Fig 1).
Remove the nuts securing the bulb holders.
Displace the holders from the lens.
Disconnect the cable harness block connector.
Remove the bulbs ftom holders **(Fig 2).**

Fitting a new bulb holders is the reversal of the removal procedure.

0037d

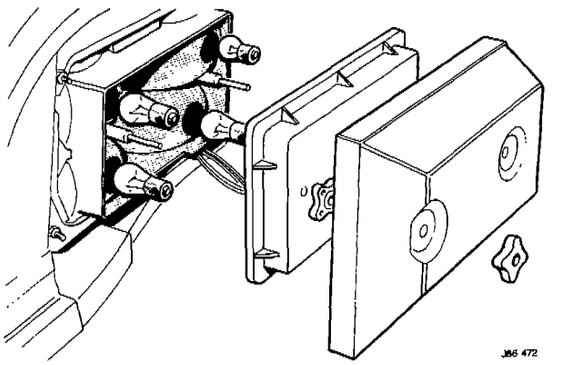


Fig 1

TAIL, STOP, FLASHER, AND REVERSE LAMP LENS

RENEW **86.40.72**

Open the luggage compartment.
Remove the rear lamp interior trim finisher (Fig 1).
Displace the side liner.
Remove the bolt securing the bulb faiure module bracket.
Displace the module from the bracket.
Remove the nuts securing the bulb holders.
Displace the holders forward.
Remove the nuts securing the lens.
Remove the bulb failure bracket.
Remove the lens assembly.

Fitting a new lens is the reversal of the removal procedure.

3001B

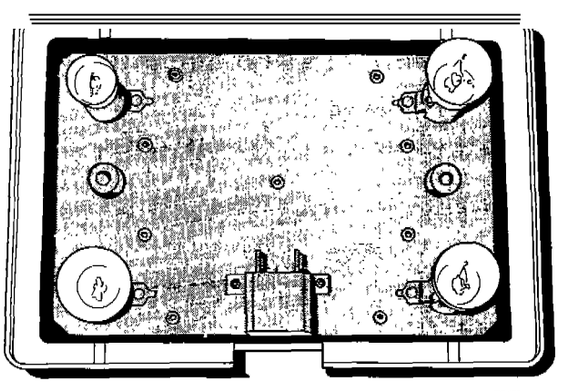


Fig 2

TAIL, STOP, FLASHER AND REVERSE LAMP BULB

RENEW **86.40.73**

Open the luggage copartment.
Remove lamp assembly interior trim finisher (Fig 1).
Remove the nuts securing the bulb holders.
Displace the bulb hoders forward.
Remove the appropriate bulb (Fig 2).

Fitting a new bulb is the reversal of the removal procedure.

3001B

NUMBER PLATE LAMP AND BULB

RENEW 86.40.84

Open the bonnet and remove the battery earth lead.
Open the luggage compartment.
Remove the screws securing the number plate lamp.
Displace the lamp from aperture.
Disconnect the electrical supply cables at the lamp lucar connectors.
Remove the lamp complete with the gasket (Fig 1).
Remove the bulb.

Fitting a new lamp or bulb is the reversal of the removal procedure.

3001B

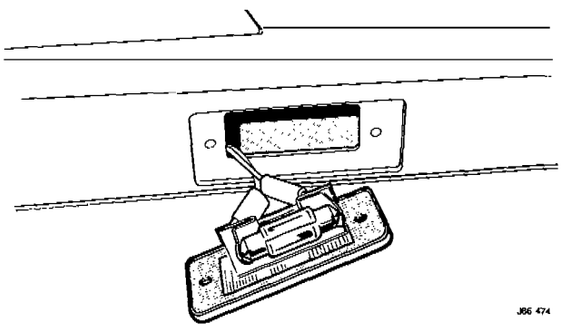


Fig 1

FOGLIGHTS

DESCRIPTION 86.40.00

Rear foglamps and front (if fitted) are controlled, via the lighting logic module and the bulb fail modules, from switches which are located on the left-hand side of the fascia switch panel. The logic module, which actuates relays in the modules, contains circuits which allow front foglamps (if fitted) to operate, provided that the sidelamps are switched on, or the rear foglamps to operate provided that side or headlamps are switched on.
With the rear or front fog lamps switched on a logic earth is connected to the lighting logic module which, energises relays that route battery power through the bulb fail modules to the respective foglarnp filaments.

30018

REAR FOG LAMP BULB

RENEW **86.41.20**

Remove the screws (Fig 1) securing the lamp lens.
Remove the lens
Remove the bulb

Reverse the order to fit a new bulb or new lens.

30018

REAR FOG LAMP ASSEMBLY

RENEW **86.41.15**

Open the bonnet and disconnect the battery earth lead.
Open the luggage Compartment.
Displace the floor carpet forward.
Remove the rear lamp assembly interior trim finisher.
Displace the side liner for access.
Displace the rear liner for access.
Cut and remove the rachet strap securing the **fog** lamp lead.
Disconnect the cable harness block connector.
Displace the foglamp from bumper.
Displace the cable harness body grommet.
Remove the lamp assembly (Fig 1).

Fitting a new lamp is the reversal of the removal procedure.

3001a

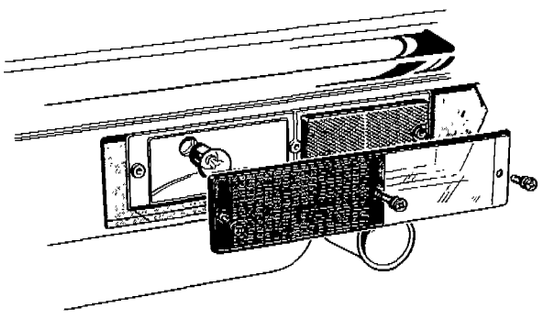


Fig 1

INTERIOR LAMPS

DESCRIPTION **86.45.00**

The interior lights operate either direct from switches or by the CPU from interior, map and door switch inputs. Interior lamps include the following:

Two lamp assemblies which form an integral **part** of the roof console.
A map lamp installed between the two interior lamp assemblies on roof console.
Door guard lamps located in each door.
Bonnet lamps secured to the underside of the vehicle bonnet.
Luggage compartment lamp secured to the underside of the luggage compartment lid.
Reading lamps located in the front seat head restraints.
Glove box lamp located within the cubby box.

3001B

GLOVE BOX LAMP BULB

RENEW **86.45.07**

Open the bonnet and disconnect the battery earth lead.
Open the car door and the glove box lid.
Depress the glove box lamp upper retaining clip.
Reposition the lamp for access and remove the bulb.

Fit new bulb by reversing the order of the removal procedure.

3001B

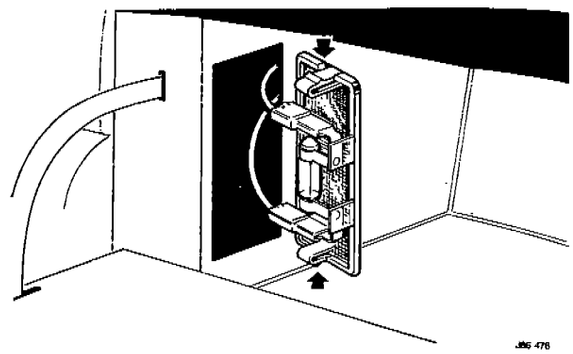


Fig 1

GLOVE BOX LAMP

RENEW **86.45.08**

Open the bonnet and remove the battery earth lead.
Open the door and the glove box lid.
Depress the glove box lamp upper retaining clip and displace the lamp from its mounted position (Fig 1).
Note and disconnect the lamp electric supply cables.
Remove the lamp assembly.

Fitting a new lamp is the reversal of the removal procedure.

3001B

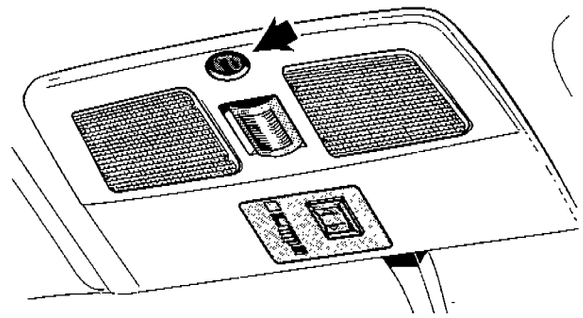


Fig 2

MAP LAMP BULB

RENEW **86.45.09**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Release the roof console retaining catch (Fig 2).
Lower the console for access.
Release the map lamp contact and remove the bulb (Fig 3).

Fitting the new bulb is reversal of the removal procedure.

30018

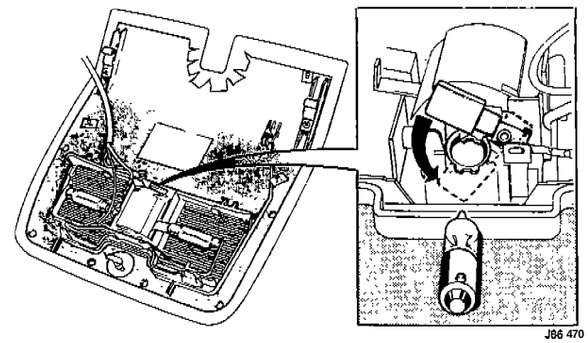


Fig 3

INTERIOR LAMP LENS,

RENEW **86.45.11**

Open the car door, turn and release the roof console retaining catch.
Lower the console for access.
Release the catches retaining the lens.
Displace and remove the lens.

Fit a new lens in the reverse order..

3001B

INTERIOR LAMP BULB

RENEW **86.45.12**

Open the car door, turn and release the roof console retaining catch.
Lower the console for access.
Release the spring contact to the bulb.
Displace and remove the bulb (Fig 1).

Fitting a new bulb is the reversal of the removal procedure.

3001B

INTERIOR LAMP ASSEMBLY

RENEW **86.45.13**

Open the bonnet and disconnect the battery earth lead.
Open the car door, turn and release the roof console retaining catch.
Lower the panel for access.
Disconnect the interior lamp cable harness multi-plug connector.
Remove the panel catch retaining washer and remove the panel catch.
Displace the lamp assembly retaining spring clips and remove the assembly.

Fitting a new lamp is the reversal of the removal Procedure.

3001B

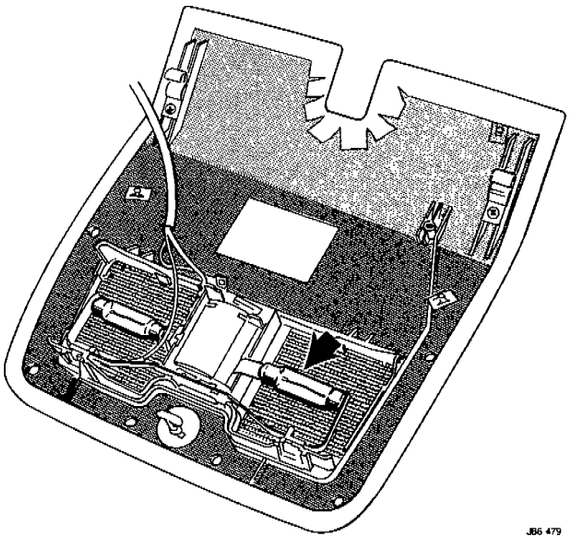


Fig 1

LUGGAGE COMPARTMENT LAMP BULB

RENEW **86.45.15**

Open the luggage Compartment.
Depress the luggage compartment lamp lens spring clip.
Displace the lens and remove the bulb.
Fit new bulb and refit the lens.

30018

LUGGAGE COMPARTMENT LAMP ASSEMBLY

RENEW **86.45.16**

Open the bonnet and disconnect the battery earth lead.
Open the luggage compartment, depress the spring clips and displace the lamp lens.
Remove the bulb.
Remove the screws securing the lamp.
Disconnect the multi-plug cable harness connector.
Remove the lamp assembly (Fig **1**).

Fitting a new lamp is the reversal of the removal procedure.

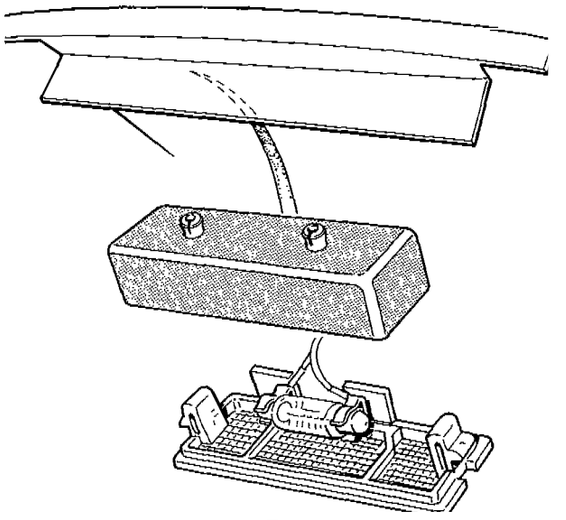


Fig **1** J86 480

3001B

MAP LIGHT LENS

RENEW **86.45.18**

Open the bonnet and disconnect the **battery** earth lead.
Open the car door, turn and release the roof **console** retaining catch (Fig 2).
Lower the console **for** access.
Remove the map light bulb.
Note and disconnect **the** cable harness lucar connectors.
Remove the interior lamp bulbs.
Remove the map light contact plate from the housing .
Carefully displace and remove the **map light** lens.

Fitting a new lens is the reversal **of** the removal procedure.

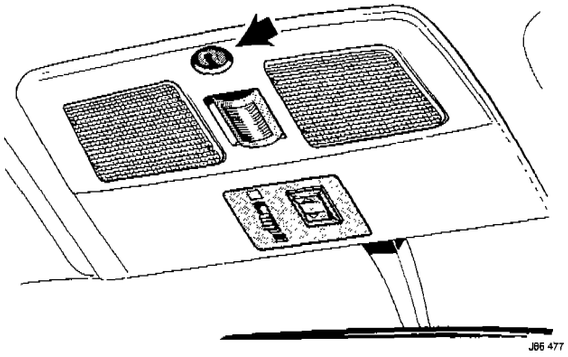


Fig 2 J86 477

3001B

TRIP COMPUTER PANEL ILLUMINATION BULB

RENEW **86.45.21**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the screw securing the switch undertray.
Remove the undertray (Fig 1).
Remove the **bulb** holder.
Remove the bulb from the holder.

Reverse the removal procedure to fit a new bulb.

30018

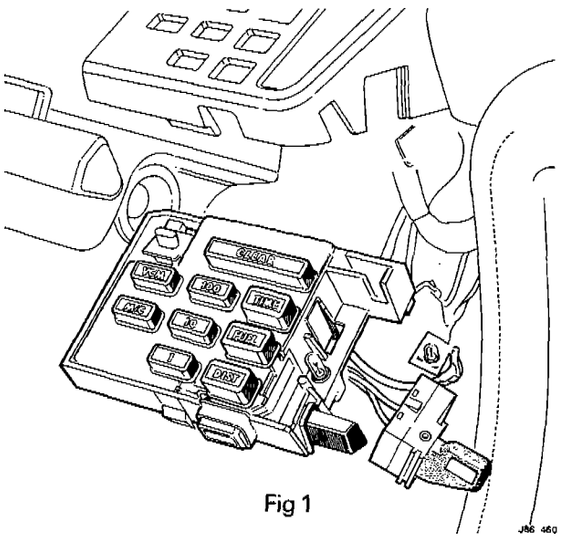


Fig 1

BONNET LAMP BULB AND LENS

RENEW **86.45.23**

Open the bonnet and disconnect the battery earth lead.
Remove the screws securing the lamp to the bonnet.
Remove the lens.
Remove the bulb (Fig 2).

To **fit** a new **bulb** or lens reverse the above procedure.

3001B

BONNET LAMP ASSEMBLY.

RENEW **86.45.24**

Open the bonnet and disconnect the battery earth **lead.**
Remove the screws and retaining clips securing the bonnet trim.
Displace the trim for access.
Disconnect the cable harness **multi-plug** connector.
Remove the screws securing the bonnet **lamp** and remove the lamp.

Reverse the above operation to fit a new lamp.

3001B

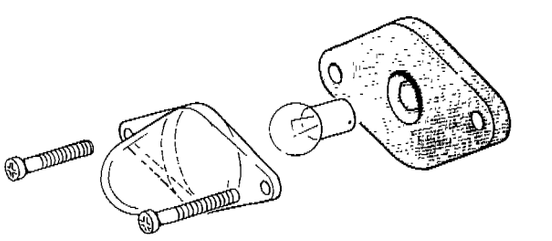


Fig 2

BONNET LAMP SWITCH

RENEW **86.65.23**

Open the bonnet and disconnect the battery earth lead.
Disconnect the switch lucar cable connector.
Remove the screws securing the switch and remove the switch (Fig **1**).

Reverse the above operations to fit **a** new switch.

30018

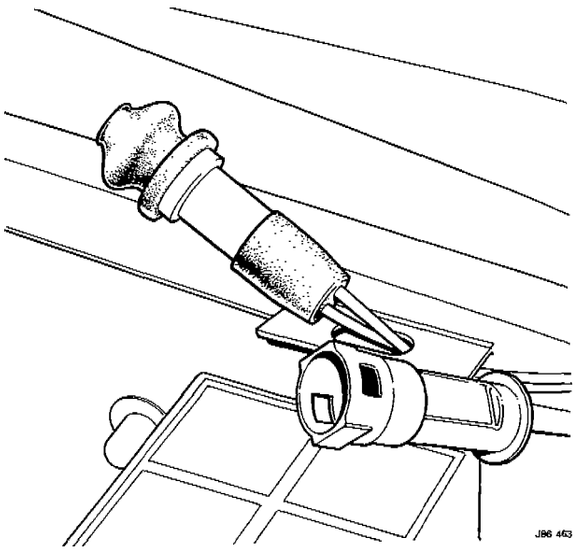


Fig **1**

SWITCH PANEL ILLUMINATION BULB

RENEW **86.45.36**

Open the bonnet and disconnect the battery earth lead.
Open the car **door.**
Remove the screw securing the switch cover **from** beneath the lighting **logic** board.
Remove the bulb holder from the switch panel then remove the bulb.

Reverse the above operations to **fit** a new bulb,

30018

INSTRUMENT ILLUMINATION BULB

RENEW **86.45.48**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver **side dash** liner.
Displace the steering colomn fully rearward.
Remove the screws securing the instrument pack.
Displace the instrument pack upwards **for access.**
Turn and remove the bulb holder.
Remove the bulb from the holder **(Fig** 2).

Fit a new bulb by reversing the removal procedure.

3001B

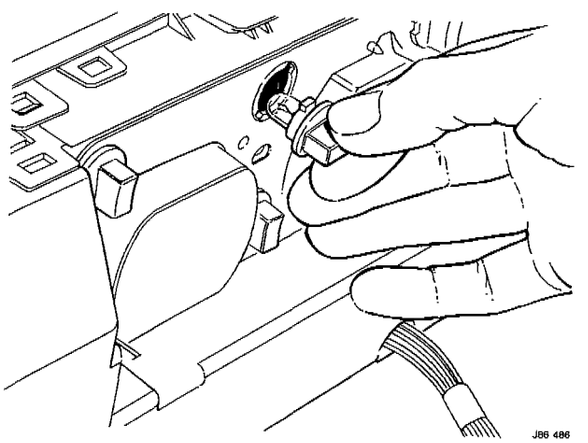


Fig 2

SPEEDOMETER ILLUMINATION BULB

RENEW 86.45.49

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side **dash** liner.
Remove the screws securing the instrument **pack.**
Remove the instrument pack **88.20.01.**
Release the electronics pack retaining **clips.**
Pivot the electronics **pack** upwards for access to the bulb.
Remove the bulb from the holder.

Fit a **new** bulb **by** reversing the removal procedure.

30015

TACHOMETER ILLUMINATION BULB

RENEW **86.45.53**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards **for** access to the bulb.
Remove the bulb from the holder.

Fit a new bulb by reversing the removal procedure.

3001B

REAR COURTESY LAMP

RENEW **86.46.03**

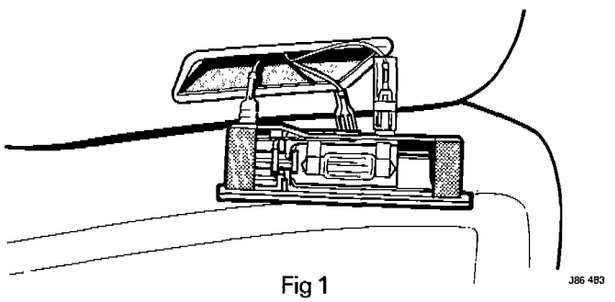


Fig 1

Open the bonnet and disconnect the battery earth lead.
Open the car door and carefully prise the lamp assembly from the rear *of* the front seat head rest.
Note the position ***of*** the electrical supply cable connections.
Disconnect the cables.
Remove the lamp assembly (Fig **1**).

Fitting a new lamp is the reversal of the removal procedure.

3001B

HEATER INDICATOR PANEL BULB

RENEW **86.45.73**

Open the bonnet and disconnect the battery earth lead.
Remove the gear lever knob 37.1**6.11**
Remove the console finisher 76.25.19
Remove the screws securing the upper console assembly.
Displace the assembly for access (Fig 2).
Remove the contron panel rear cover securing screws.
Remove the rear cover.
Turn and remove bulb.

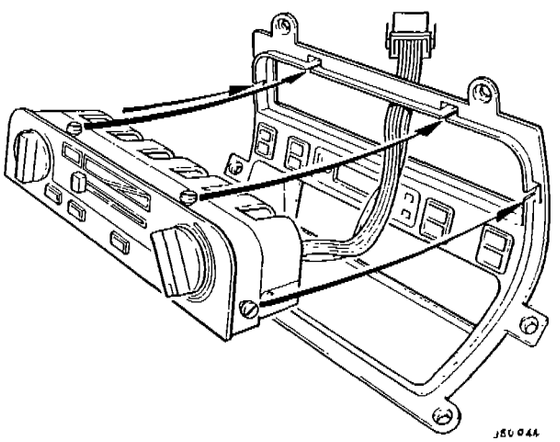


Fig 2

Fit a new bulb is the reversal of the removal procedure.

30018

OIL GAUGE ILLUMINATION BULB

RENEW **86.45.50**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb from the holder.

Fit a new bulb by reversing the removal procedure.

30018

TEMPERATURE GAUGE ILLUMINATION BULB

RENEW **86.45.51**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb from the holder.

Fit a new bulb by reversing the removal procedure.

30016

FUEL GAUGE ILLUMINATION BULB

RENEW **86.45.52**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb from the holder.

Fit a new bulb by reversing the removal procedure.

3001B

BATTERY CONDITION INDICATOR ILLUMINATION BULB

RENEW **86.45.56**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb from the holder.

Fit a new bulb by reversing the removal procedure.

3001B

L.C.D. ILLUMINATION BULB

RENEW **86.45.57**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb from the holder.

Fit a new bulb by reversing the removal procedure.

3001B

FLASHER INDICATOR BULB

RENEW **86.45.63**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb from the holder.

Fit a new bulb by reversing the removal procedure.

3001B

IGNITION INDICATOR BULB

RENEW **86.45.64**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb from the holder.

Fit a new bulb by reversing the removal procedure.

30016

HEADLAMP HIGH BEAM INDICATOR BULB

RENEW **86.45.65**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb from the holder.

Fit a new bulb by reversing the removal procedure.

30018

OIL PRESSURE INDICATOR BULB

RENEW **86.45.66**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb (2 Fig 1) from the holder.

Fit a new bulb by reversing the removal procedure.

3001B

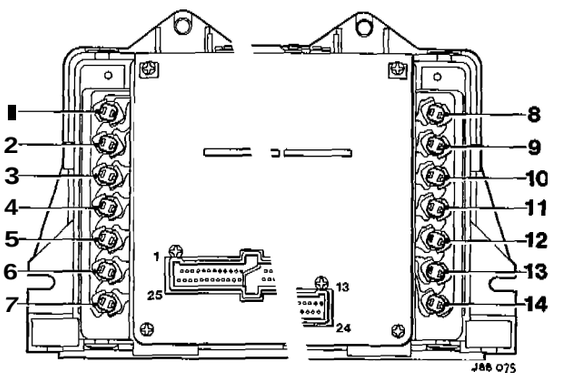


Fig 1

BRAKE WARNING INDICATOR BULB

RENEW **86.45.69**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb from the holder.

Fit a new bulb by reversing the removal procedure.

30018

FUEL WARNING INDICATOR BULB

RENEW **86.45.70**

Open the bonnet and disconnect the battery earth lead.
Open the car **door.**
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb **(1**3 Fig 1) from the holder.

Fit a new bulb by reversing the removal procedure.

3001B

LOW COOLANT WARNING INDICATOR BULB

RENEW **86.45.74**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb (7 Fig **1**) from the holder.

Fit a new **bulb by** reversing the removal procedure.

3001B

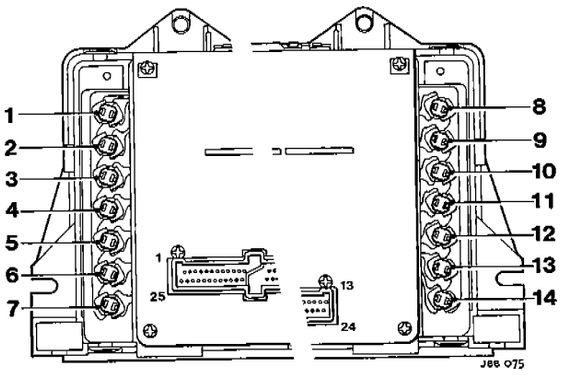


Fig 1

SEAT BELT WARNING INDICATOR BULB

RENEW **86.45.75**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb (3 Fig 1) from the holder.

Fit a new bulb by reversing the removal procedure.

3001B

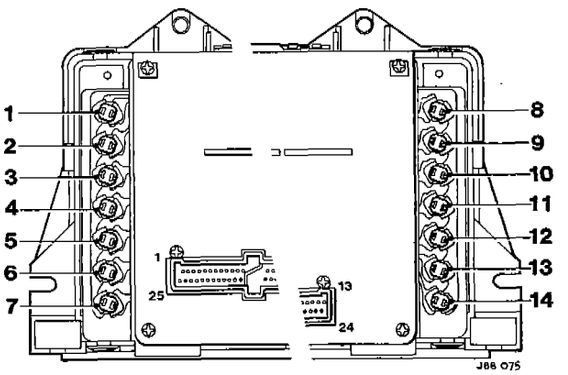


Fig 1

BULB FAILURE WARNING INDICATOR BULB

RENEW **86.45.77**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb (10 Fig 1) from the holder.

Fit a new bulb by reversing the removal procedure.

3001B

CARAVAN WARNING INDICATOR BULB

RENEW **86.45.78**

Open the bonnet and disconnect the battery earth **lead.**
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb from the holder.

Fit a new bulb by reversing the removal procedure.

3001B

PARKING LAMP INDICATOR BULB

RENEW **86.45.78**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb from the holder.

Fit a new bulb by reversing the removal procedure.

30018

EXHAUST TEMPERATURE WARNING INDICATOR BULB

RENEW **86.45.80**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb (1 Fig 1) from the holder.

Fit a new bulb by reversing the removal procedure.

3001B

WIPE/WASH WARNING INDICATOR BULB

RENEW **86.45.86**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb from the holder.

Fit a new bulb by reversing the removal procedure.

30018

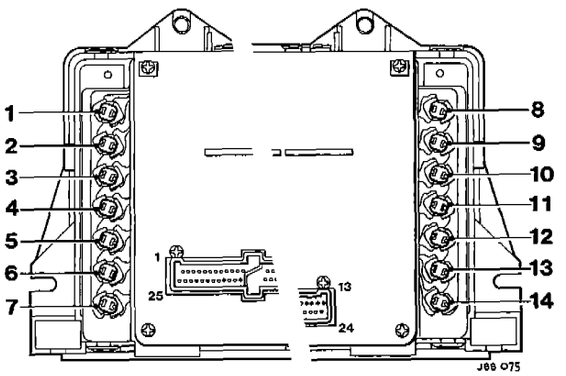


Fig 1

BOOT OPEN WARNING INDICATOR BULB

RENEW **86.45.87**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb (4 Fig 1) from the holder.

Fit a new bulb by reversing the removal procedure.

30018

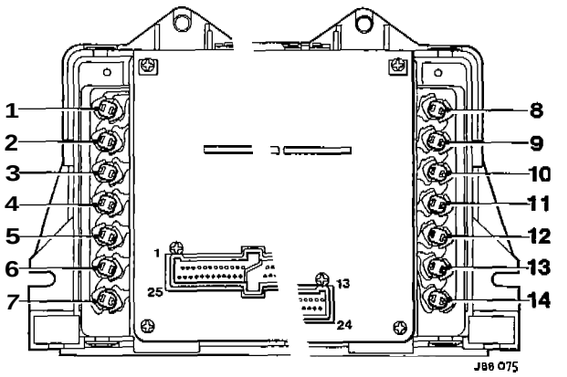


Fig 1

DOOR OPEN WARNING INDICATOR BULB

RENEW **86.45.88**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb (5 Fig 1) from the holder.

Fit a new bulb by reversing the removal procedure.

3001B

HIGH COOLANT TEMPERATURE WARNING INDICATOR BULB

RENEW **86.45.89**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb (6 Fig 1) from the holder.

Fit a new bulb by reversing the removal procedure.

30018

SPORT MODE INDICATOR BULB

RENEW **86.45.90**

Open the bonnet **and** disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb from the holder. Fitting a new bulb by reversing the removal procedure.

30018

CHECK ENGINE WARNING INDICATOR BULB

RENEW **86.45.91**

Open the bonnet and disconnect the battery **earth lead.**
Open the car door.
Remove the driver side **dash** liner.
Remove the screws securing the instrument pack.
Remove **the** instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards **for access to** the bulb.
Remove the bulb **(14** Fig 1) from the holder.

Fitting a new bulb **by** reversing the removal procedure.

3001B

ANTI LOCK BRAKE WARNING INDICATOR BULB

RENEW **86.45.92**

Open the bonnet and disconnect the battery earth lead.
Open the car **door.**
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards **for** access to the bulb.
Remove the bulb (12 Fig 1) from the holder.

Fitting **a** new bulb by reversing the removal procedure.

3001B

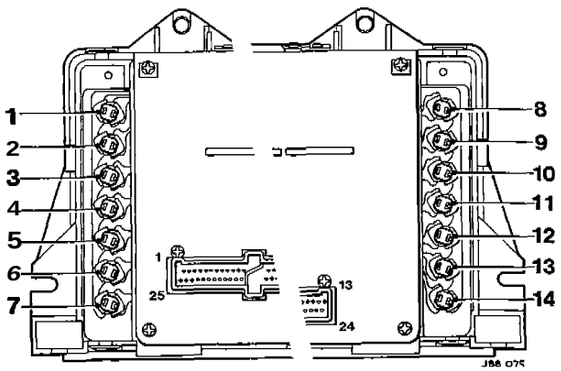


Fig 1

CIRCUIT FAIL WARNING INDICATOR BULB

RENEW **86.45.93**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner.
Remove the screws securing the instrument pack.
Remove the instrument pack 88.20.01.
Release the electronics pack retaining clips.
Pivot the electronics pack upwards for access to the bulb.
Remove the bulb (I 1 Fig 1) from the holder.

Fit a new bulb by reversing the removal procedure.

3001B

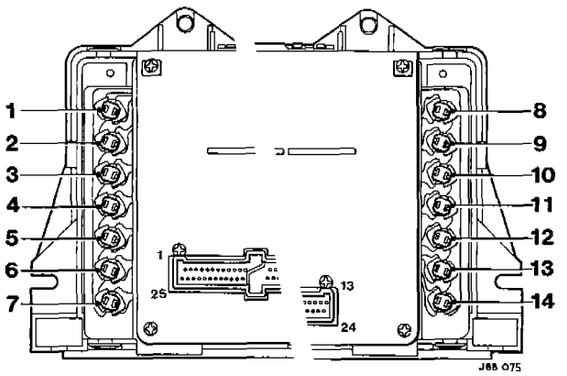


Fig 1

REAR BULB FAILURE MODULE

RENEW ***86.55.70***

Open the bonnet and disconnect the battery earth lead.
Open the luggage compartment.
Remove the rear lamp interior trim finisher.
Displace the side liner for access.
Remove the module earth bolt and displace the earth lead from the bolt.
Disconnect the fog lamp cable harness block connector.
Disconnect the module cable harness block connectors.
Remove the upper bolt securing the module.
Remove the module from the bracket.

Fitting the new module is reversal of the removal procedure.

3001**0**

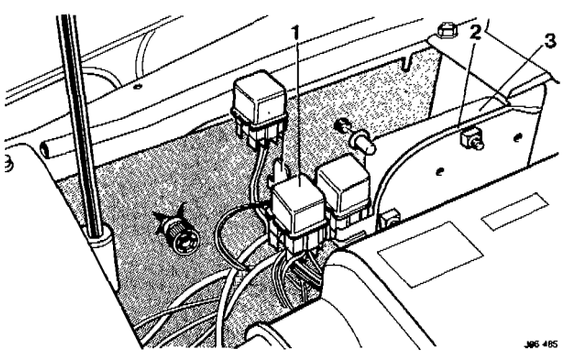


Fig 2

FRONT BULB FAILURE MODULE

RENEW **86.55.71**

Open the bonnet and disconnect the battery earth lead.
Remove the relay cover.
Remove relays from retaining brackets.
Disconnect the headlamp block connector.
Cut and remove the rachet straps securing the cable harness connectors.
Disconnect the cable harness connectors.
Remove the module earth bolt.
Remove the bolt securing the module to mounting bracket (2 Fig 2).
Remove the module (**3** Fig 2).

Fitting the new module is reversal of the removal procedure.

3001**0**

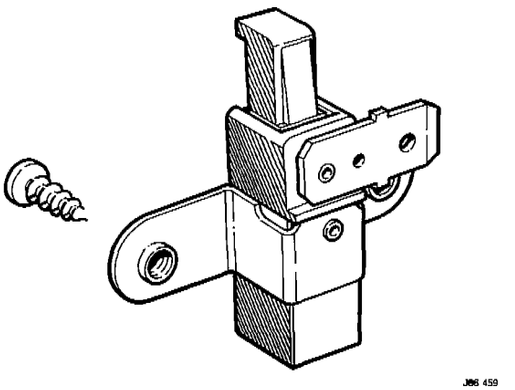
LUGGAGE COMPARTMENT LIGHT SWITCH

RENEW **86.65.22**

Open the bonnet and disconnect the battery earth lead.
Open the luggage compartment.
Remove the nut securing the sound deadening pad and displace the pad for access.
Remove the screws securing the switch.
Disconnect the leads from the switch.
Remove the switch (Fig 1).

Fitting a new switch is the reversal of the removal procedure.

3001B



J86 459

Fig 1

GLOVE BOX SWITCH

RENEW **86.65.77**

Open the bonnet and disconnect the battery earth lead.
Open the passenger door and glove box lid
Carefully prise the switch assembly from its mounting.
Disconnect the lucar connectors.
Remove the switch.

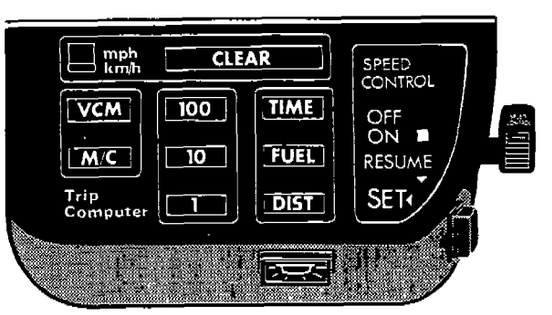
Fitting a new switch is the reversal of the removal procedure

3001B

TRIP COMPUTER

DESCRIPTION **86.80.00**

Trip computer functions are operated by a microprocessor in the instrument pack (Fig 2). The functions, which are selected on the trip computer keyboard, provide journey information which is indicated below the VCM:



J88 487

Fig 2

AV SPEED: average speed for the distance travelled since last reset.
TIME TAKEN: elapsed time since last reset.
TIME TO GO: time to journey completion, assuming the same average speed is maintained.
RANGE: distance the vehicle can travel on the fuel remaining in the tank, assuming that the average speed and fuel consumption remain constant.
DISTTRAV: distance travelled since last reset.
DIST TO GO: distance to journey completion calculated from the distance travelled and the distance entered at journey commencement.
AV FUEL: average fuel consumption since last reset.
FUEL USED: quantity of fuel used since last reset.
INST FUEL: instantaneous fuel consumption calculated over a two second period.

Trip computer functions can be divided into three categories, i.e. time, fuel and distance, each category having three functions which are selected in the following sequence by multiple operation of TIME, FUEL and DIST push-buttons:

TIME:
Average speed, Time taken and Time to go.
FUEL:
Average fuel, Fuel used and Instantaneous fuel.
DIST:
Range, Distance travelled and Distance to *go.*

Other controls on the trip computer keyboard are as follows:

MPH/KPH: a two-position switch which permits the information presented *to* be displayed in either imperial or metric values.
CLEAR: a push-button which permits fault condition messages to be erased thus allowing trip computer information to be presented. This facility is revoked when another fault condition occures.
VCM: a push-button which, provided that no fault condition exists (park brake and seatbelt excepted), permits automatic display sequencing of predetermined ISO symbols. At the end of the sequence, normal system operation is resumed.
M/C: a push-button which clears (resets) the trip computer memory so that new journey information can be entered. To perform the reset function, the push-button must be held depressed for a period in excess of five seconds.
100: a push-button which permits the hundreds digit of the display to be set to the desired value.
10: a push-button which permits the tens digit of the display to be set to the desired value.
1: a push-button which permits the units digit of the display to be set to the desired value.

3001B

TRIP COMPUTER AND LOGIC MODULE

RENEW **86.80.01**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the screw securing the trip computer undertray and remove the undertray.
Displace the on/off switch (Fig 1).
Displace the trip computer and release the retaining clips.
Disconnect the cable harness block connector.
Remove the trip computer assembly

Fitting a new assembly is the reversal of the removal procedure.

3001B

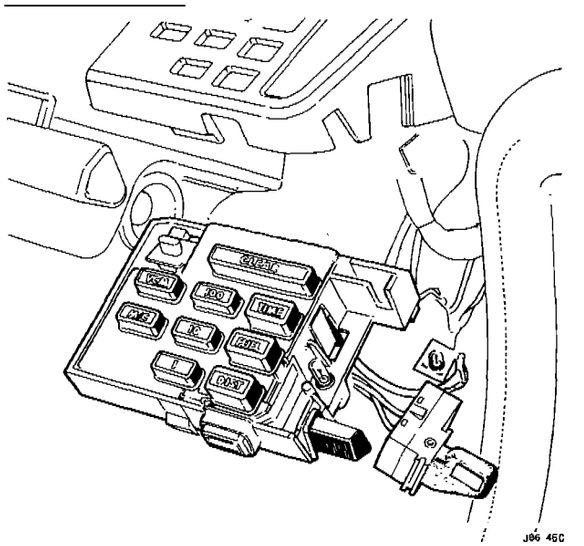


Fig 1

DOOR LOCK CONTROL MODULE

RENEW **86.80.03**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the passenger side dash liner.
Remove the screws securing the module.
Disconnect the cable harness block connector.
Remove the module (1 Fig 1).

Fitting a new module is the reversal of the removal procedure.

3001B

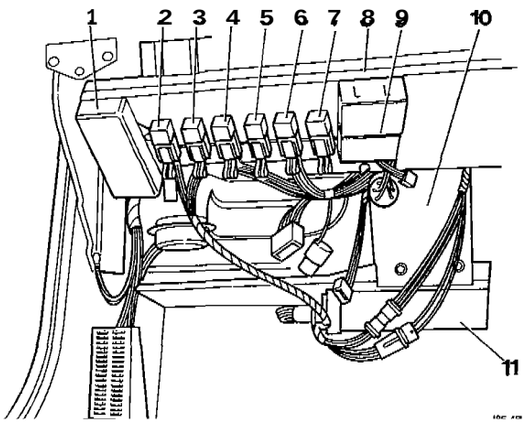


Fig 1

CENTRE CONSOLE SWITCH AND CLOCK MODULE

RENEW **86.80.13**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the gear lever knob 37.16.11.
Remove the console finisher 76.25.19.
Remove the screws securing the upper console assembly (1 Fig 2).
Displace the assembly from its location.
Disconnect the cable harness block connector (2 Fig 2).
Remove the screws securing the harness clamp.
Remove the module.

Fitting a new module is the reversal of the removal procedure.

3001B

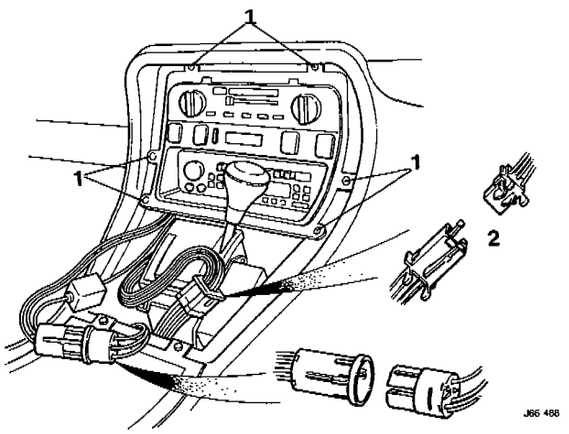


Fig 2

LIGHTING LOGIC AND SWITCH MODULE

RENEW **86.80.05**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove drivers dash liner 76.46.11.
Remove the screw securing the lighting logic undertray and remove the undertray (Fig 3).
Displace the master lighting switch.
Release the clips retaining the logic board.
Remove the logic board from the fascia.
Disconnect the green cable harness block connector.
Remove the logic board.

Fitting a new logic board is the reversal of the removal procedure.

30018

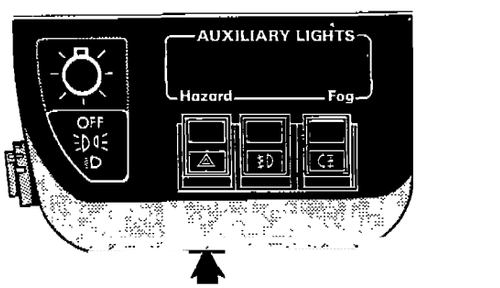


Fig 3

WIPER LOGIC MODULE

RENEW **86.80.11**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the passenger side dash liner.
Remove the screws securing the module.
Displace the module from retaining clip.
Disconnect the cable harness block connector.
Remove the module (*8* Fig 1).

Fitting a new module is the reversal of the removal procedure.

3001B

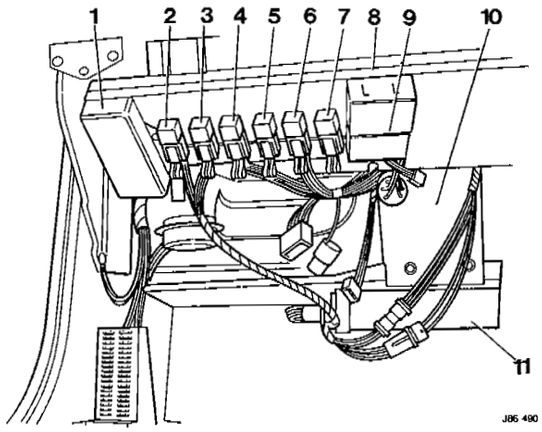


Fig 1

HEATER SWITCH CONTROL MODULE

RENEW **86.80.14**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the gear lever knob 37.16.11.
Remove the console finisher 76.25.19.
Remove the screws securing the upper console assembly (**1** Fig 2).
Displace the upper console assembly for access.
Slacken the screws securing the control module.
Disconnect the cable harness block connector (2 Fig 2).
Remove the module.

Fitting a new module is the reversal **of** the removal procedure.

3001B

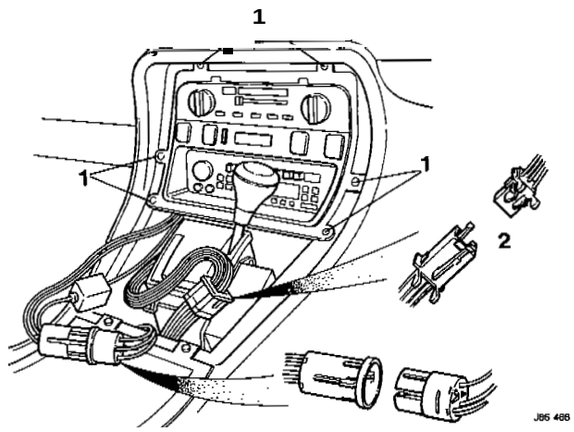


Fig 2

CENTRAL PROCESSOR UNIT

RENEW **86.80.17**

Open the bonnet and disconnect the battery earth lead
Open the car door and remove the passenger side dash liner 76.46.15
Remove the lower screws securing the processor and remove the spacers.
Displace the processor upwards to disengage the keyhole slot.
Disconnect the cable harness block connectors.
Remove the screw securing the earth lead.
Remove the processor unit (10 Fig 3).

Fitting a new central processor is the reversal of the removal procedure.

3001B

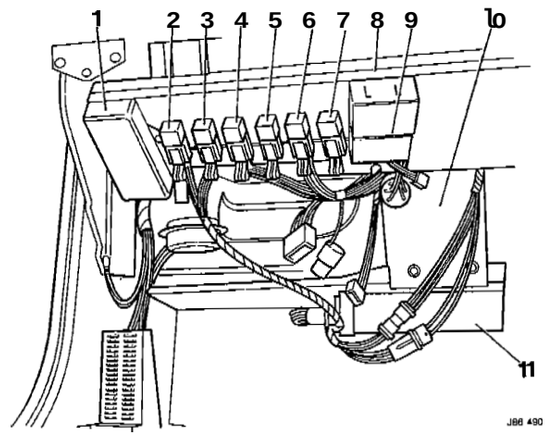


Fig 3

INSTRUMENT ILLUMINATION DIMMER MODULE

RENEW **86.80.18**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the steering wheel 57.60.01.
Remove lower steering column cowl 76.46.03.
Remove upper steering column cowl 76.46.02.
Remove the nut securing the dimmer switch.
Displace the switch from the mounting bracket.
Slide the module upwards to disengage the retaining pegs.
Disconnect the black block connector.
Remove the dimmer module (Fig 1).

Fitting **a** new module is the reversal of the removal procedure.

3001B

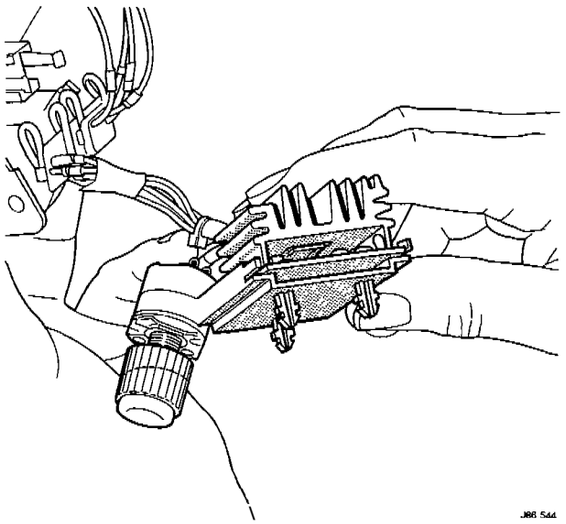


Fig **1**

FLASHER CANCELLATION MECHANISM

RENEW **86.65.85**

Open the bonnet and disconnect the **battery** earth lead.
Open the car **door.**
Remove the steering wheel 57.60.01.
Remove the rheostat control knob and remove the screws securing the lower nacelle securing screws.
Remove the nacelle.
Remove the retaining ring securing the steering wheel collets.
Remove the bolts securing the cancellation mechanism.
Remove and discard the mechanism.

Fitting **a** new module is the reversal ***of*** the removal procedure.

3001B

AUDIBLE WARNING SPEAKER

RENEW **86.80.20**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the steering wheel 57.60.01
Remove lower steering column cowl 76.46.03
Remove upper steering column cowl 76.46.02
Remove w/wiper/washer switch 86.65.41
Displace the direction indicator cancellation module from its mounting bracket.
Remove the nut/bolt securing the speaker harness clamp.
Displace the speaker.
Remove the speaker grille.
Disconnect the brown cable harness block connector.
Remove the speaker/cancellation module assembly (Fig 1).

Fitting a new audible warning speaker is the reversal of the removal procedure.

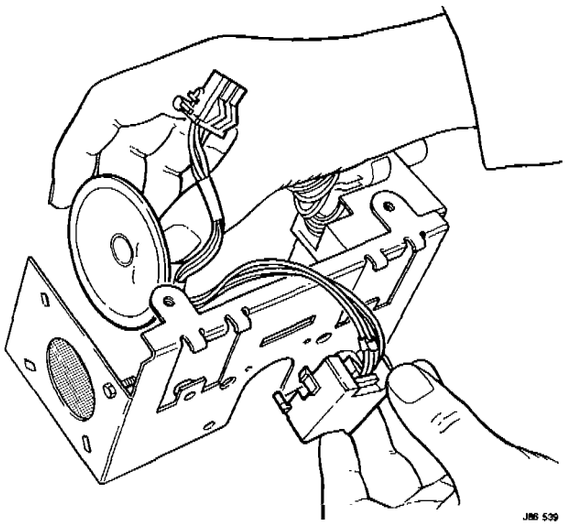


Fig 1

3001B

SLIDING ROOF MOTOR

RENEW **86.76.01**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Release the fastener securing the roof console.
Lower the console for access
Disconnect the interior lamp cable harness multi-plug connector.
Remove the roof console assembly.
Disconnect the roof motor cable harness block connector.
Undo the rear bolt securing the motor (the bolt will remain in its position).
Remove the bolt securing the front of the motor.
Remove the motor assembly from its roof position and remove the rear securing bolt.

Fitting a new sliding roof motor is the reversal of the removal procedure having first fitted the rear securing bolt to the motor assembly.

3001B

SLIDING ROOF MOTOR SWITCH

RENEW **86.76.05**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Release the fastener securing the roof console.
Lower the console for access.
Disconnect the cable harness multi-plug block connectors.
Remove the roof console assembly.
Release the tags securing the roof motor switch.
Remove the switch/harness **assembly from** the roof console.

Fitting a new sliding roof motor switch is the reversal of the removal procedure.

30016

SLIDING ROOF MOTOR LIMIT SWITCH

RENEW ***86.76.06***

Open the bonnet and disconnect the battery earth **lead.**
Open the car door.
Remove the sliding roof flange finisher 76.82.23
Remove the sun visors 76.10.17
Remove **the** crash roll cantrail **76.13.1**0
Release the fastener securing the roof console.
Lower the console for access.
Disconnect the cable harness multi-plug connectors.
Remove the roof console assembly.
Disconnect the roof motor cable harness block connector.
Carefully release the headlining from the front clips for access.
Mark the position of the limit switch using pieces of tape.
Cut and **remove** the ratchet **straps** securing the limit switch.
Remove the switch magnet assembly.
Remove the switch/harness assembly.

Fitting a new sliding roof motor limit switch is the reversal of the removal procedure usiing the marker tape to align the switch magnet.

30018

ELECTRICALLY OPERATED AERIAL

DESCRIPTION 86.50.00

An electric aerial (Fig 1) is fitted as standard.
Radio cassette player operation is with the ignition switched to ON or AUXILIARY. In these positions the ignition switch energises a radio relay which connects battery power to the radio cassette player. When the radio is switched ON, a signal is applied to the CPU which activates a 15 second timer. This timer in turn energises aerial up relay which connects battery power to the aerial motor, the earth return path for the motor being through aerial down relay.
When the radio cassette player or the ignition is switched OFF, the signal applied to the CPU is removed and a second timer is activated. This timer energises the aerial down relay for a period of 15 seconds after a delay of 10 seconds.

3001B

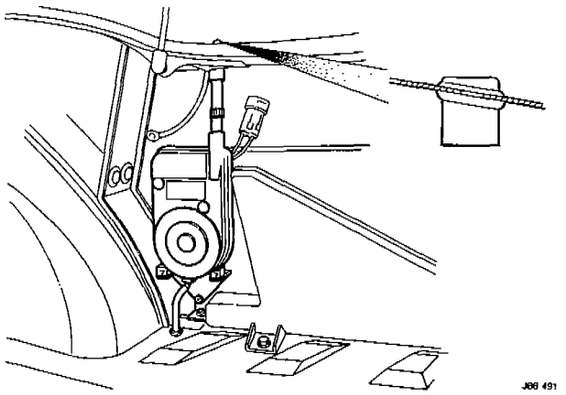


Fig 1

FRONT DOOR SPEAKER

RENEW 86.50.13

Open the bonnet and disconnect the battery earth lead.
Remove the veneer panel. 76.47.11
Remove the upper trim pad. 76.34.02
Remove the lower trim pad. 76.34.03
Remove the armrest. 76.34.22
Disconnect the speaker rnulti-plug connector.
Remove the nuts securing the speaker and Remove the speaker (Fig 2).

Fitting a new speaker is the reversal of the removal procedure.

3001B

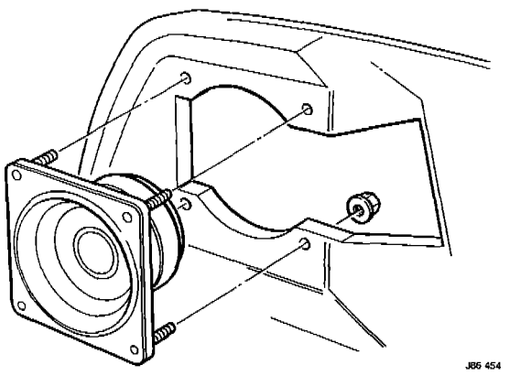


Fig 2

REAR DOOR SPEAKER

RENEW **86.50.14**

Open the bonnet and disconnect the battery earth lead.
Open the car door
Remove the veneer panel 76.47.12
Remove the upper trim pad 76.34.05
Remove the lower trim pad 76.34.06
Remove rear door arm rest 72.34.23
Disconnect the speaker multi-plug connector.
Remove the nuts securing the speaker and remove the speaker (Fig 1).

Fitting a new speaker is the reversal of the removal procedure.

3001B

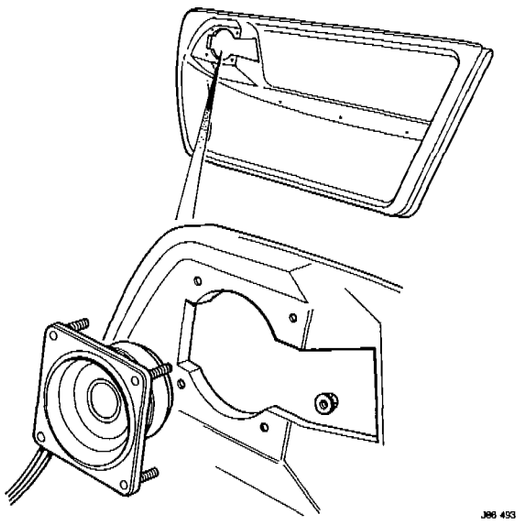


Fig 1

ELECTRIC AERIAL

RENEW **86.50.21**

Open the bonnet and disconnect the battery earth lead.
Open the luggage compartment.
Remove the floor carpet 76.19.30
Remove the front liner 76.19.31
Remove the right hand side liner 76.19.23
Remove the bolt seciring the earth strap and disconnect the earth lead.
Undo the nut securing the aerial lead and disconnect the lead.
Cut and remove the rachet strap securing the aerial block connector (1 Fig 2).
Disconnect the black cable block connector (2 Fig 2).
Slacken the lower nuts/bolts securing the aerial assembly (3 Fig 2).
Disconnect the drain tube (4 Fig 2).
Remove the aerial assembly.

Fitting a new electric aerial is the reversal of the removal procedure.

3001E

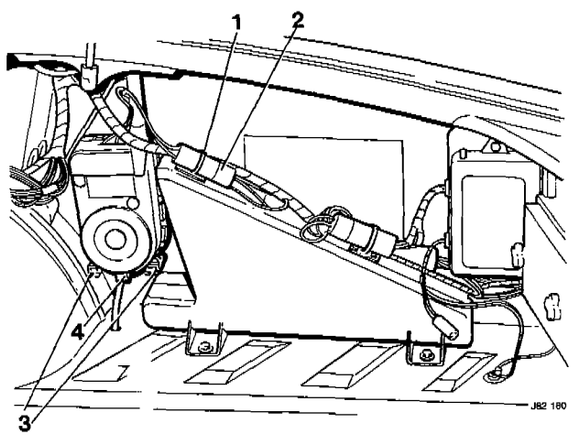


Fig 2

ELECTRIC AERIAL MAST

RENEW **86.50.29**

Undo the aerial to mast retaining nut.
Switch the ignition and the radio on.
Allow the aerial motor to stop at the fully up position.
Displace and withdraw the mast (note the position of the teeth on cable) (Fig **1**).
Switch the ignition off.
During the 15 seconds delay period before the aerial motor operates **to** retract the mast, prepare the mast and insert the mast flexible cable into aerial motor assembly.
Whilst the aerial motor **is** operating engage the flexible mast cable with the drive gear and allow the mast to seat into aerial (Fig 2).
Tighten the the mast retaining nut.
Switch ignition **on** and allow the mast **to** fully extend.
Switch radio and ignition off.

3001B

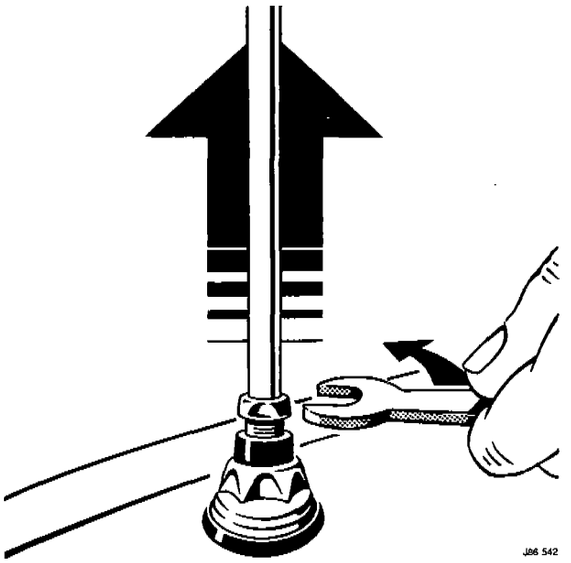


Fig **1**

IGNITION SWITCHED POWER DISTRIBUTION

DESCRIPTION **86.65.00**

Fused and unfused ignition switched power is distributed from the centre **fusebox** and line splices in the bulkhead harness.
The line splices are supplied, via contacts of the ignition 'on' relay, when the vehicle ignition switch is **ON.** In this position a power earth is connected to each fuse monitoring circuit and, via the inertia switch and a reverse polarity protection diode, to **a** contact of the ignition **'on'** relay coil.

The centre fuseblock contains a bank of six fuses identified **1** to 6 from **left** to right. Fuse ratings and the **circuit(s)** supplied are detailed under **a** relevant heading of this Section.

3001B

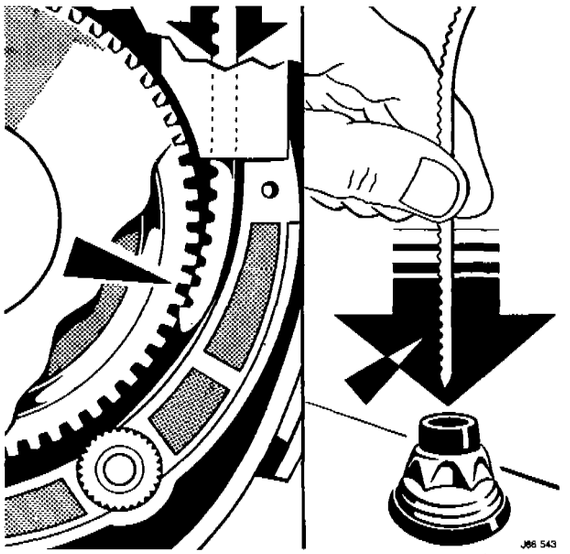


Fig 2

LOGIC EARTH DISTRIBUTION

DESCRIPTION **86.00.00**

Logic earths are distributed from power earth point located close to the **CPU.**

3001E

IGNITION SWITCHED EARTH DISTRIBUTION

DESCRIPTION 86.65.00

Ignition switched earths are distributed from the ignition and inertia switches. The ignition switch distributes the earths in all switch position except OFF, and the inertia switch distributes the earths when tripped with the ignition ON.

3001B

IGNITION SWITCH

RENEW 86.65.03

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the steering wheel 57.60.01.
Remove the instrument illumination rheostat control knob.
Remove the screws securing the lower nacelle and remove the nacelle.
Remove the screws securing the upper nacelle and remove the nacelle.
Using a suitable punch remove the shear bolts securing the ignition switch.
Displace the switch.
Release the ignition switch retaining tags and displace the switch from the lock assembly.
Disconnect the cable harness block connector.
Discard the switch.

Fitting a new switch is the reversal of the removal procedure.

30018

POWERED SEATS

DESCRIPTION *86.75.00*

The driver and front passenger seats are adjusted electrically by means of four rocker type switches located on the powered seat switch assemblies. Each seat contains four motors which enable seat movement as follows:

Foreward or back.
Cushion front raise or lower.
Cushion rear raise or lower.
Squab raise or recline.
Driver and front passenger seat movement is with the ignition switched ON, the power being applied to relays which route battery power to the switch assemblies when energised.

Each seat motor is connected to the moving contact of its associated switch which is spring biased in the **OFF** position. Two poles of each switch are supplied with battery power, while the other **two** are connected to earth. The switches are wired so that each motor can operate in either direction, depending on the requirement of the operator.

DRIVERS SEAT MOTOR SWITCH

RENEW **86.75.03**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the console finisher 76.25.1 9
Displace the cables from the rear **of** the switch pack for access.
Disconnect the cable harness block connector.
Remove the nuts securing the switch pack.
Remove the switch pack (Fig 1).

Fitting a new switch **pack** is the reversal **of** the removal procedure.

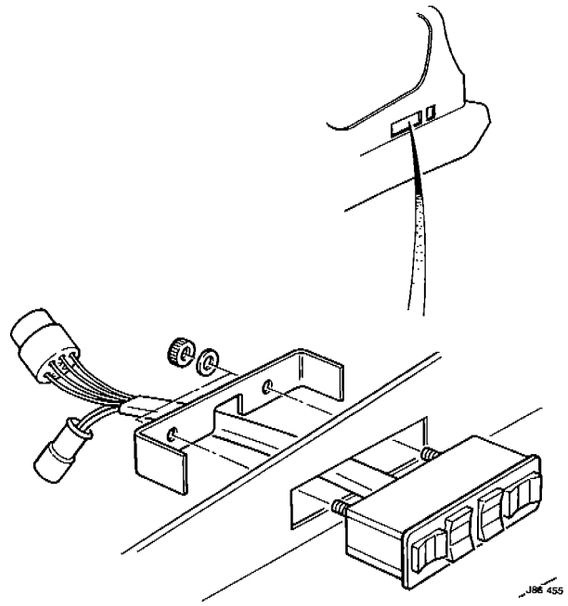


Fig 1

30018

PASSENGER SEAT MOTOR SWITCH

RENEW **86.75.05**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the console finisher 76.25.1 **9**
Displace the cables from the rear of the switch pack for access.
Disconnect the cable harness block connector.
Remove the nuts securing the switch pack.
Remove the switch pack.

Fitting a new switch pack **is** the reversal of the removal procedure.

3001B

STARTER CIRCUIT

DESCRIPTION **86.60.00**

The starter circuit supplies **battery** power to the starter motor when the ignition switch is set to START. The circuit comprises a starter solenoid and relay. On vehicles fitted with automatic transmission, a start inhibit relay is also incorporated.

An ignition switched earth energises the starter relay, when the ignition switch is set to START. On vehicles with automatic transmission, this occurs when the start inhibit relay is energised through either neutral or park switches of the linear gearbox selector switch. When energised, the starter relay connects battery power to the starter solenoid containing pull-in and hold-on coils. The pull-in coil is earthed through the starter motor windings and the electrical current passing through the motor is sufficient to start the armature turning. When closed, the solenoid contacts connect full battery power to the motor and the armature rotates at full power.

3001B

STARTER MOTOR

RENEW **86.60.01**

Open the bonnet and disconnect the battery earth lead.
Remove the bolt securing the dip stick the **the** engine manifold.
Remove the dip stick assembly.
Raise the vehicle **on** a ramp.
From below:- Remove the bolt securing the front suspension rear mounting inner bracket.
Disconnect the engine earth strap.
Remove the rear mounting nut and remove the mounting bracket.
From below:- Remove the upper starter securing bolt.
Remove the lower starter securing bolt.
Displace the starter motor downwards for access.
Remove the starter terminal securing nut and disconnect the lead from the terminal.
Disconnect the cable harness **block** connector.
Remove the starter motor (Fig **1**).

Fitting **a** new starter motor is the reversal of the removal procedure.

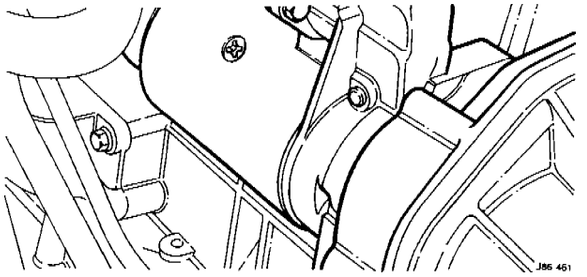


Fig **1**

30018

GEAR BOX LINEAR SWITCH

RENEW **44.15.12**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the gear lever knob 37.16.11
Remove the console finisher 76.25.19
Remove the screws (1 Fig 2) securing the linear switch (2 Fig 2).

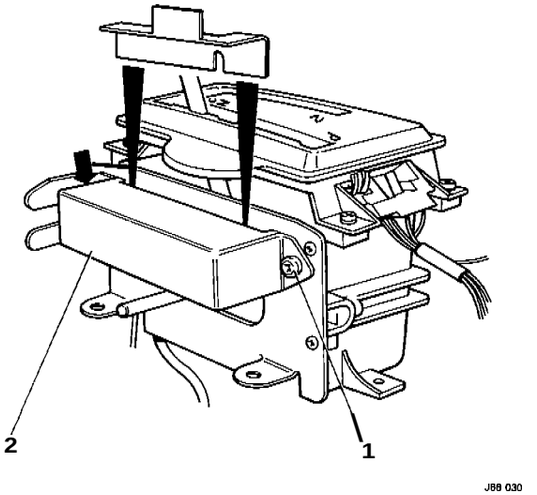


Fig 2

Displace the switch for access.
Disconnect the cable harness block connectors
Remove the switch assemble.

On fitting new switch select **"N"** neutral.
Fit the new (2 **Fig 1**) switch in position.
Fit but do not tighten the securing screws (1 Fig 1).
Position the setting gauge (JD 127) (Fig **1**) between the linear switch and side plate.
Ensure the slot of the setting gauge is fully located onto the pin of the linear switch.
Tighten the securing screws.
Remove the setting gauge.
Check that the vehicle starts in "PARK and **NEUTRAL** but does not start in other positions.
Check the bar graph **on** the instrument pack indicates the correct position of the gear selector.

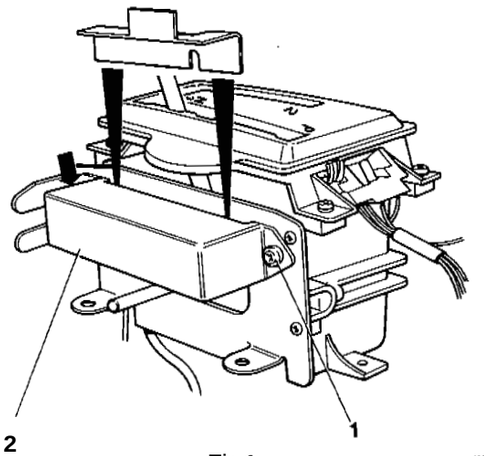


Fig **1**

DATA

SERVICE TOOL.

JD 127 Linear Switch Setting Gauge

3001B

STOP LAMP SWITCH

RENEW **86.65.51**

Open the bonnet and disconnect the battery earth lead.
Remove the drivers side dash liner 76.46.11
Remove the stop lamp harness ratchet strap.
Disconnect the cable harness block connector.
Remove the nuts securing the switch to the pedal box.
Remove the pedal **box** grommet **for** access to the switch.
Remove the switch assembly (Fig **2).**

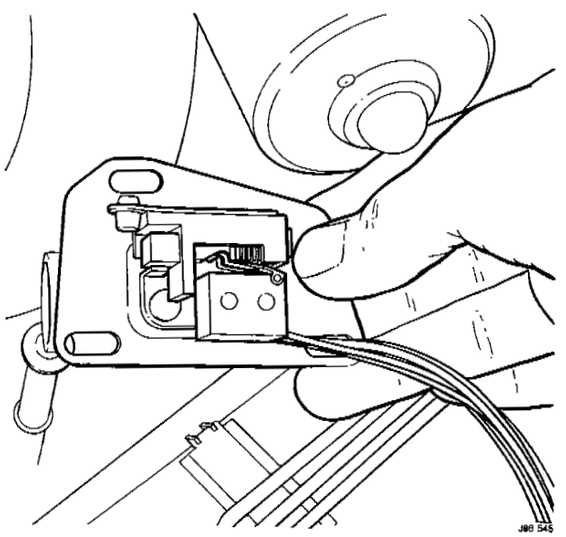


Fig 2

Fitting a new switch is the reversal of the removal procedure.

30018

HANDBRAKE WARNING SWITCH

RENEW **86.65.45**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the front seat cushion 76.70.02
Release the clip securing the handbrake gaiter and displace the gaiter.
Remove the top screw securing the switch **(1** Fig 1).
Slacken the **bottom** securing screw.
Disconnect the supply cables from the switch.
Remove the switch.

Fitting a new switch is the reversal **of** the removal procedure

30018

SEAT PAD SWITCH

RENEW **86.57.21**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the front seat cushion 76.70.02
Displace the accessible diaphragm hooks from the frame and reposition the diaphragm for access.
Cut and remove the ratchet strap securing the cable harness.
Remove the seat belt switch pad (Fig 2).

Fitting a new switch is the reversal of the removal procedure

3001B

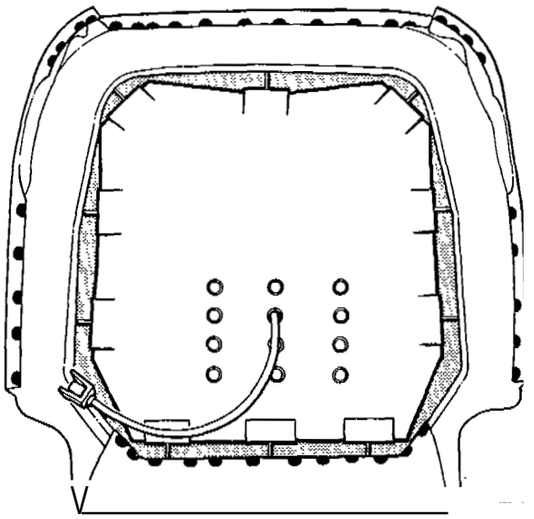


Fig 1

SEAT BELT BUCKLE SWITCH

RENEW **86.57.25**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the "B" post lower trim pad 76.13.29
Remove the seat belt upper anchor securing nut cover.
Remove the upper anchor securing nut.
Displace the seat belt.
Remove the wavy washer and spacer.
Unclip the "B" post upper trim pad and displace the pad from its mounted position.
Reposition the belt through the trim pad and remove the pad.
Remove the finisher from the "B" post aperture.
Reposition the seat belt through the the "B" post.
Remove the nut securing the seat belt reel.
Remove the reel.
Disconnect the cable harness block connector.
Remove the seat belt buckle securing nut cover (1 Fig 3).
Remove the bolt (2 Fig 3) securing the seat belt buckle.
Remove the seat belt buckle.
Note the position of and remove the buckle spacers.

Fitting a new assembly is the reversal of the removal procedure.

3001B

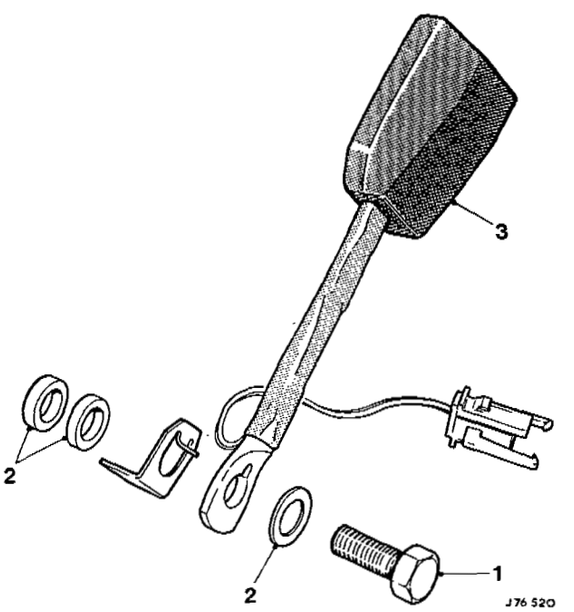


Fig 2

ILLUMINATED SUN VISOR BULB

RENEW **86.45.95**

Open the bonnet and disconnect the battery.
Open the door.
Position the sunvisor downwards.
Lift the sunvisor cover.
Remove the mirror illumination lens and remove the bulb.

Refitting a replacement bulb is the reversal of the removal procedure.

30018

GEARBOX POWER RELAY

RENEW **86.55.89**

Open the bonnet and disconnect the battery.
Open the door and remove the passengers side dash liner 76.45.15
Slacken the screws securing the relay front mounting panel.
Remove the screws securing the mounting panel.
Displace the relay mounting panel and disengage the mounting panel slots from the slackend front screws.
Remove the relay (Violet).

Reverse the removal procedure to refit the replacement relay.

3001B

BOOT RELEASE SWITCH

RENEW **86.65.25**

Open the bonnet and disconnect the battery.
Remove the passenger side dash liner 76.45.15.
Open the glove box lid and remove the glovebox light lens.
Disconnect one connector from the lamp, remove the lamp and disconnect the remaining connector.
Disconnect the boot switch harness multi plug and cut the ratchet strap securing the harness to the gearbox.
Reposition the harness from the self adhesive clip, tie a suitable draw string to the harness.
Displace the switch from the mounting bracket and withdraw the harness/draw string.
Detach the string from the harness and discard the switch.

Reverse the removal procedure to refit the replacement switch.

3001B

HARNESSES

DESCRIPTION 86.70.00

All connections between the various electrical devices are made through cable harnesses terminated by connectors of which there are two main types; Positive Mate Mk4 (PM4) which are cylindrical and contain up to 9 contacts, and Positive Mate High Density (PMHD) which are rectangular and contain up to 36 contacts.
Each connector type housing is injection moulded in one of a range of insulation material colours to permit rapid connector location in vehicle positions where groups of similar connector type and size exist. In addition, each connector is allocated an identification number prefixed by letters to identify the harness of which the connector forms part.

30018

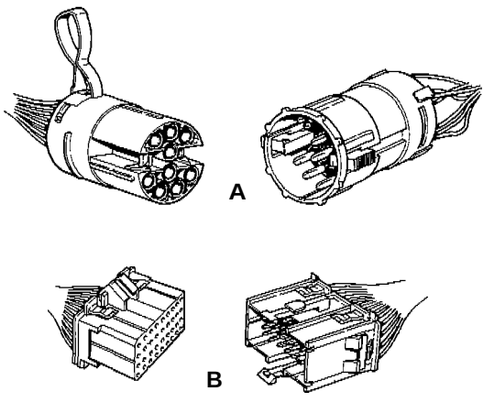


Fig 1

HARNESS CONNECTORS

DESCRIPTION 86.70.00

PM4 (Fig 1) and PMHD (Fig 2) connectors contain polarising, positive mate latching and secondary locking features. PM4 connectors also have rubber seals which protect the terminals in exterior locations where severe environmental conditions exist.
The polarising feature comprises a tongue and groove arrangement which must be aligned correctly for the connectors to be united. The positive mate locking feature, comprising latching arms and dead locking ramps, prevents connector separation which is permitted only when the arms are depressed sufficiently to pass below the ramps as the connectors are parted. The secondary locking feature comprises a locking cover which prevents individual terminals emerging from the rear of the connector should the terminal locking lance fail.

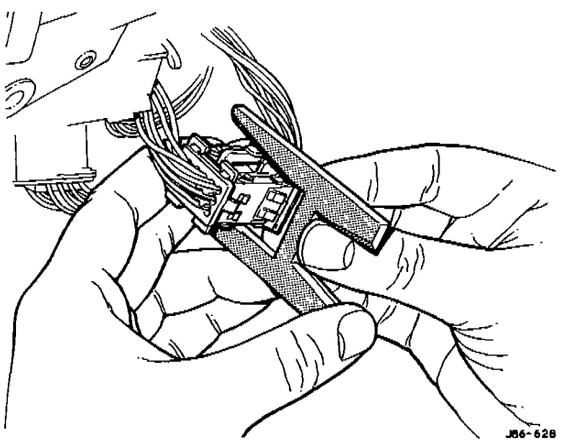


Fig 2

CONNECTOR SEPARATION AND UNION

Both PM4 and PMHD type connectors are separated by depressing their latching arms sufficient for the dead locking ramps to be cleared as the connectors are parted. The latching arms of PMHD connectors can be depressed either by hand or by using a separating tool which also commences the parting process. Use Service tool JD 121 to separate the connectors (Fig 3).
Uniting both PM4 and PMHD connectors is simply a matter of aligning the tongues wiyh thw corresponding grooves and gently pushing the two halves together until the latching arms travel up and over the dead locking ramps.

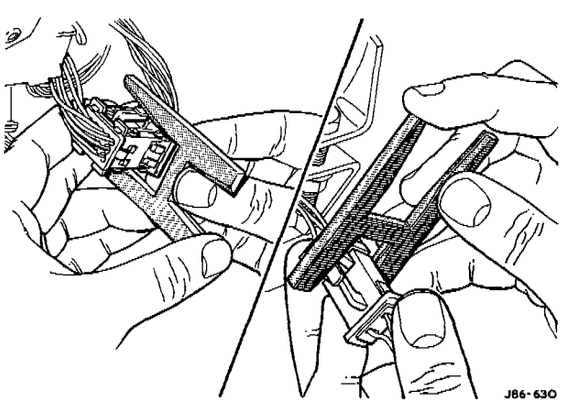


Fig 3

PM4 TERMINAL EXTRACTION PROCEDURE

Tools and materials required:

1 Terminal extraction tool.
2 Terminal extraction aid.
3 Silicone oil.

Release the secondary locking cover from the connector housing.
If a rubber cable seal is fitted, lubricate the wires with silicone oil, dislodge the seal from the housing and slide it up the wires.
Whilst applying pressure to the terminal, fit the terminal extraction tool (Fig **1)** over the terminal until the tool abuts the housing and withdraw the terminal from the housing via the cable entry end. If any resistance is encountered when withdrawing the terminal, ensure that the terminal extraction **tool** is fitted correctly and repeat the operation.
Lubricate the angled end of the extraction aid with silicone oil then insert the aid into the hole containing the wire to be removed.
Withdraw the wire and terminal through the extraction aid and remove the aid.

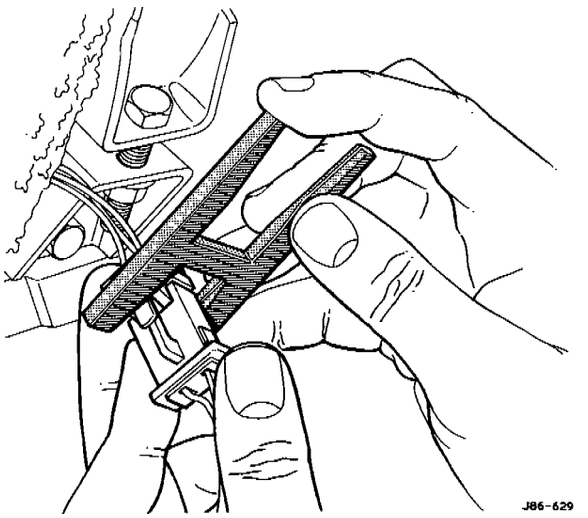


Fig **1**

PM4 TERMINAL INSERTION PROCEDURE

Tools and materials required:

1 Terminal insertion aid.
2 Silicone oil.

If necessary release the secondary locking cover and slide the cable seal back along the wires as described in the first two steps of the PM4 terminal extraction proceedure.
Ensure the wire passes through the secondary locking cover and, after lubricating the cable seal with silicone oil, insert the aid into the appropriate hole in the seal until its open end is just proud of the surface.
Install the end of the terminated wire in the insertion aid then pass the loaded aid through the seal and remove the aid.
Insert the terminal into its location in the connector housing ensuring that the terminal is fully home and the locking lance engaged.
Slide the cable seal along the wires and locate it in the connector housing.
Install the secondary locking cover in the connector housing.

PMHD TERMINAL EXTRACTION PROCEDURE

Tools and materials required:

1 Terminal extraction tool.
2 Terminal extraction aid.
3 Silicone oil.

Release the secondary locking cover from the connector housing using a suitable instrument, e.g. a screwdriver, and set the cover in the cable assembly mode, i.e. the cover fully extended on its four locking arms.

Whilst applying pressure *to* the terminal, fit the terminal extraction **tool** (Fig **1)** over the terminal until the **tool** abuts **the** housing and withdraw the terminal from the housing via the cable entry end. **If** any resistance is encountered when withdrawing the terminal from the housing, repeat the operation.

PMHD TERMINAL INSERTION PROCEDURE

Insert the terminal through the secondary locking cover into its location in the connector housing ensuring that the terminal is fully home and its locking lance engaged. Fit the secondary locking cover to the connector housing.

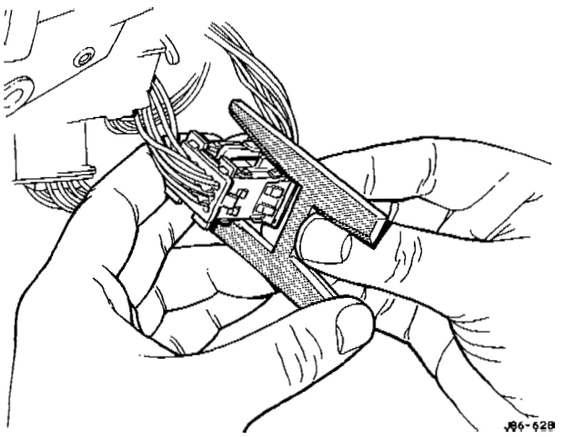


Fig **1**

HARNESS FAULTS

Harness faults fall into two distinct categories; open circuit faults in which either power or earth cannot reach **a** device, and short circuit faults in which an unwanted connection is made between one part of a circuit and either another circuit or **ground.** Ground short circuits invariably cause either a fuse to blow or device control to be lost.

OPEN CIRCUIT FAULTS

Open circuit faults are normally attributed to dirty or badly/non united connectors and these conditions should, therefore, be checked and eliminated first. An open circuit due to a broken wire or terminal locking lance is remote, but instances **of** such are repaired as follows:

1 Locate the broken wire using either the **JDS** or **by** performing a continuity check between the terminals of the harness connectors (Fig **1**).
2 Examine the connector faces for indented terminals associated with terminal locking lance failure, and renew any offending terminal as detailed in the relevant terminal insertion/extraction procedure.
3 Examine the faulty harness covering for signs of physical damage, i.e. chaffing and/or cuts, and both investigate and correct the cause if damage is evident.
4 Remove the harness covering to expose the broken section in **the** wire and remake the connection by installing an in-line connector as shown in (Fig **2).**
5 Electrically check the repaired wire to ensure the repair is good and re-cover the harness using insulating tape.

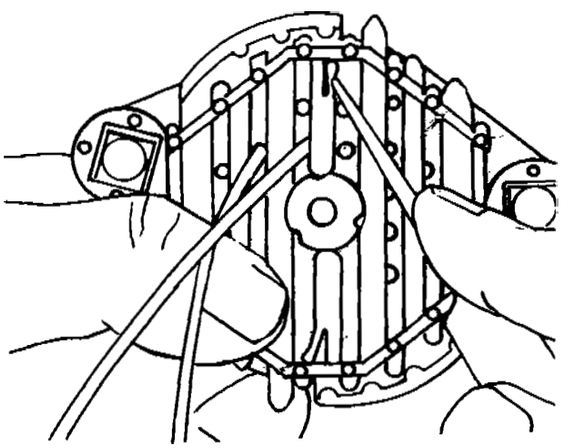


Fig 2

SHORT CIRCUIT FAULTS

Short circuit faults may be attributed to connector contamination or damaged wire insulation. If no connector contamination is evident, proceed **as** follows:

1 Locate the shorted wire using either the ATE or by performing a continuity check between the terminals **of** the harness connectors.

2 Examine the faulty harness covering for signs of physical damage, i.e. chaffing and/or cuts, and **both** investigate and correct the cause if damage is evident.
3 Remove the harness covering to expose the shorted section in the wire and tape over the shorted section if minor insulation damage is the cause. **If** insulation damage is extensive, remove the damaged section and remake the connections by installing in-line connectors (Fig **1**).
4 Electrically check the repaired wire to ensure the repair is **good** and re-cover the harness using insulating tape.

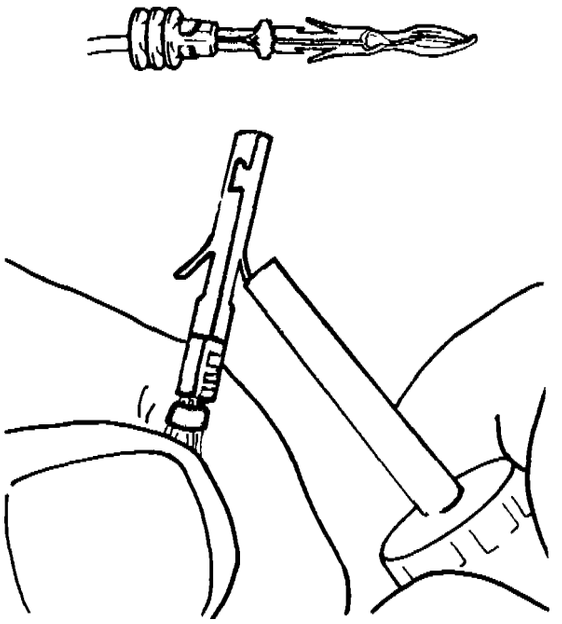


Fig 1 J86-531

ELECTRICAL REPAIRS

This section provides instruction in the following repairs:

- Typical Electrical Repairs
- Splicing Copper Wire
- Splicing Aluminum Wire
- Splicing Twisted/Shielded Cable

TYPICAL ELECTRICAL REPAIRS

An open circuit is an incomplete circuit. Power cannot reach the load or reach ground. If a curcuit **is** open, active components do not energize. **A** short circuit is an unwanted connection between one part of the circuit and either ground or another part of the circuit. **A** short circuit causes **a** fuse to blow or a circuit breaker to open.

Short: Circuits Caused by Damaged Wire Insulation

- Locate the damaged wire.
- Find and correct the cause of the wire insulation damage
- For minor damage, tape over the wire. **If** damage is more extensive, replace the faulty segment of the wire. (Refer **to** the **splicing** instructions for **copper,** aluminum, **or** shielded cable for the correct splicing procedure).

SPLICING COPPER WIRE

Open the Harness

If the harness is taped, remove the tape. To avoid wire insulation damage, use a sewing "seam ripper" to cut open the harness (available from sewing supply stores). If the harness has a plastic conduit, simply pull out the desired wire.

Cut the Wire

Begin by cutting as little wire off the harness as possible, You may need the extra length of wire later if you decide to cut more wire off to change the location of a splice. You may have to adjust splice locations to make certain that each splice is at least 40mm **(1.1/2")** away from other splices, harness branches, or connectors.

Strip the Insulation (Fig 1)

If the wire size is unknown, start with the largest opening in the wire stripper and work down until a clean strip of the insulation is achieved. Avoid nicking or cutting any of the wires.
The splice should be at least 40mm (1.1/2") away from any other splices, harness branches, or connectors.
Check the stripped wire for nicks or cut strands. If the wire is damaged, repeat the procedure on a new section or wire. The **two** stripped wire ends should be equal in length.

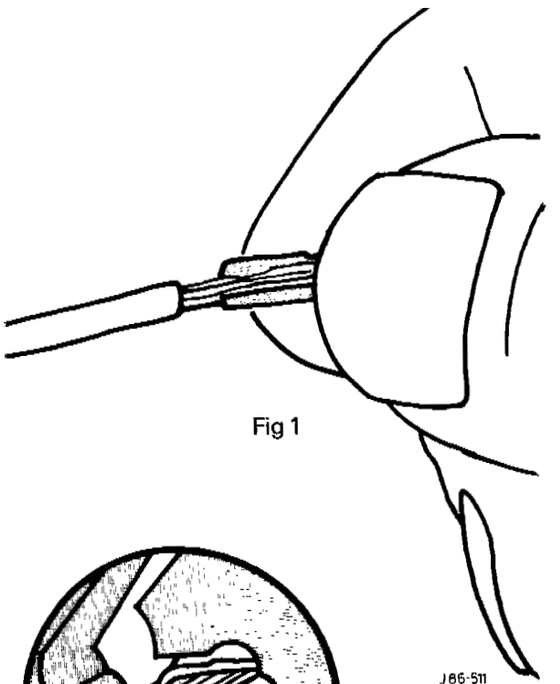


Fig 1

Crimp the wires (Fig 2)

Select the proper clip to secure the splice. To determine the proper clip size for the wire being spliced, following the directions included with your clips. Select the correct anvil on the crimper. (On most crimpers the choice is limited to either a small or large anvil). Overlap the two stripped wire ends and hold them between thumb and forefinger as shown. Then center the splice clip under the stripped wires and hold it in place.

- Open the crimping tool to its full width and rest one handle on a firm flat surface.
- Centre the back of the splice clip on the proper anvil and close the crimping tool to the point where the former touches the wings of the clip.
- Ensure that the clip **and** wires are still in the correct position. Then, apply steady pressure until the crimping tool closes.

Before crimping the ends of the clip, be sure that

- The wires extend beyond the clip in each direction,
- No strands of wire are cut loose, and
- No insulation is caught under the clip.

Crimp the splice clip again, once on each end. Do not let the crimping tool extend beyond the edge of the clip or you may damage or nick the wire.

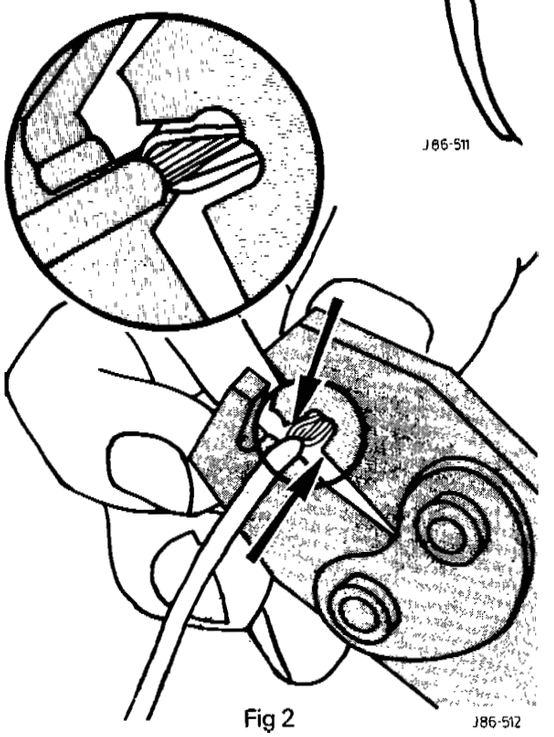


Fig 2

Solder (Fig 3).

Apply 50/50 rosin core solder to the opening in the back of the clip as shown. Following the manufacturer's instructions for the solder equipment you are using.

Tape the Splice

Centre and roll the splicing tape. The tape should cover the entire splice. Roll on enough tape to duplicate the thickness of the insulation on the existing wires. Do not flag the tape. Flagged tape may not provide enough insulation, and the flagged ends will tangle with the other wires in the harness.

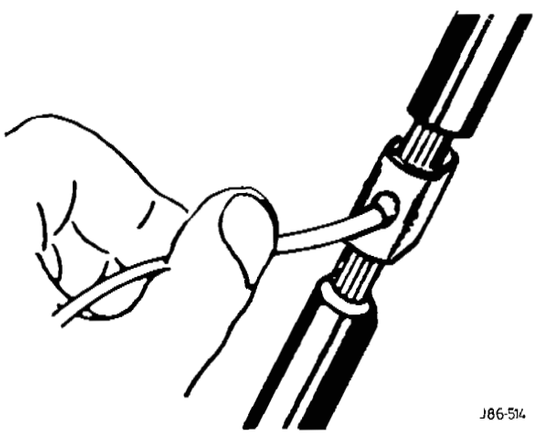


Fig 3

If the wire does not belong in a conduit or other harness covering, tape the wire again. Use a winding motion to cover the first piece of tape.

SPLICING TWISTED/SHIELDED CABLE

Twisted/shielded cable is sometimes used to protect wiring from electrical noise (stray signals).

Remove Outer Cover

Remove the outer jacket and discard it. Be careful to avoid cutting into the drain wire or the mylar tape.

Unwrap the Tape (Fig 1)

Unwrap the tape, but do not remove it. The tape will be used to rewrap the twisted conductors after the splices have been made.

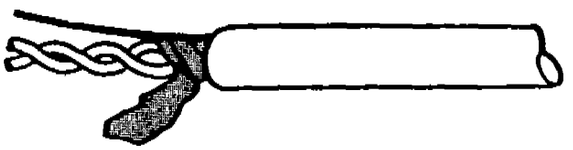


Fig 1

J86-521

Prepare the Splice

Untwist the conductors. Then, prepare the splice by following the splicing instructions for copper wire presented earlier. Remember to stagger splices to avoid shorts.

Re-Assemble the Cable

After you have spliced and taped each wire, rewrap the conductors with the mylar tape. Be careful to avoid wrapping the drain wire in the tape.

Next, splice the drain wire following the splicing instructions for copper wire. Then, wrap the drain wire aound the conductors and mylar tape.

Tape the Cable (Fig 2)

Tape over the entire cable using a winding motion. This tape will replace the section of the jacket you removed to make the repair.

Fig 2

J86-526

TERMINATED CABLES

Terminated cables are now available for repairing electrical wiring connectors. When used in conjuction with a proprietary crimp tool and heat gun, component/ harness replacement can be greatly reduced where termination damage occurs. The full range of terminated cables are listed over the page.

Repair procedure

Locate the faulty harness connector using JDS.
Remove the faulty terminal from the harness cable and bare the cable end.
Insert the bared cable end in to the crimp connector on the terminated cable (1 Fig 3). Secure the cable with a crimp tool (2 Fig 3).
Shrink the insulation sleeve with the heat gun (3 Fig 3).
Insert the new terminal into the connector block and remake the connection.

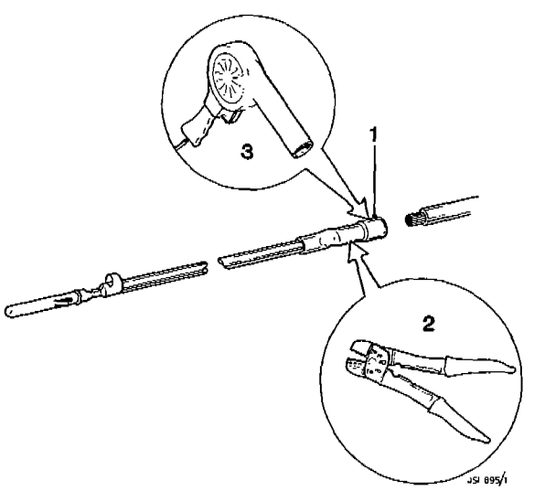


Fig 3

AVAILABLE TERMINATED CABLES

PART NUMBER	CABLE COLOUR	SIZE	TERMI-NATION	CONNECTOR APPLICATION
DBC 3551	White	0.5	Pin	Amp Econoseal Series E
DBC 3552	White	0.5	Socket	Amp Econoseal Series E
DBC 3553	Yellow	2.0	Pin	Amp Econoseal Series E
DBC 3554	Yellow	2.0	Socket	Amp Econoseal Series E
DBC 3557	White	0.5	Socket	Amp Econoseal Series J
DBC 3558	Yellow	2.0	Socket	Amp Econoseal Series J
DBC 3561	White	0.5	Pin	PMHD Connector
DBC 3562	White	0.5	Socket	PMHD Connector
DBC 3565	White	0.5	Pin	PM4 Connector
DBC 3566	White	0.5	Socket	PM4 Connector
DBC 3567	Blue	1.0	Pin	PM4 Connector
DBC 3568	Blue	1.0	Socket	PM4 Connector
DBC 3569	Yellow	2.0	Pin	PM4 Connector
DBC 3570	Yellow	2.0	Socket	PM4 Connector
DBC 3571	Green	3.0	Pin	PM4 Connector
DBC 3572	Green	3.0	Socket	PM4 Connector
DBC 3575	White	0.5	Socket	Amp (Timer)
DBC 3576	Yellow	2.0	Socket	Amp (Timer)
DBC 3579	White	0.5	Lucar	Relay Base
DBC 3580	Yellow	2.0	Lucar	Relay Base
DBC 3581	Green	3.0	Lucar	Relay Base
DBC 3594	White	0.5	Lucar (Brass)	187 Blade Receptable
DBC 3595	White	0.5	Fastin-Faston	250 Fastin-Faston Receptable
DBC 3596	White	0.5	Lucar	187 Blade Receptable
DBC 3597	White	0.5	Lucar	250 Blade Receptable
DBC 3598	White	0.5	Fastin-Faston	250 Fastin-Faston Receptable
DBC 3599	White	0.5	Socket	Mic 5 Way
DBC 3600	White	0.5	Socket	Mic 5 Way
DBC 3601	White	0.5	Socket	Bosch 25 Way Connector
DBC 3602	White	0.5	Flag	Amp Connector
DBC 3603	White	0.5	Flag	Amp Connector
DBC 3604	Yellow	2.0	Socket	Bosch 25 Way Connector
DBC 3605	Yellow	2.0	Lucar (Chrome)	187 Blade Receptable
DBC 3606	Yellow	2.0	Fastin-Faston	250 Fastin-Faston Receptable
DBC 3607	Yellow	2.0	Socket	Amp Timer
DBC 3608	Yellow	2.0	Socket	Mic 5 Way
DBC 3612	White	0.5	Socket	TTS Socket
DBC 3613	Yellow	2.0	Socket	TTS Socket
DBC 3614	Green	3.0	Socket	TTS Socket
DBC 3617	White	0.5	Socket	Bosch Connector
DBC 3618	Yellow	2.0	Socket	Bosch Connector
DBC 3621	White	0.5	Flag	Kiekert
DBC 3622	Yellow	2.0	Flag	Kiekert
DBC 3645	White	0.5	Pin	Packard Connector
JLM 1451	–	–	–	ITT/Cannon – 2-Way – Male
JLM 1452	–	–	–	ITT/Cannon – 2-Way – Female
JLM 1453	–	–	–	ITT/Cannon – 4-Way – Male
JLM 1454	–	–	–	ITT/Cannon – 4-Way – Female

BULKHEAD CABLE HARNESS

RENEW **86.70.09**

Open the bonnet and disconnect the battery earth lead.
Open the car door.
Remove the driver side dash liner 76.46.11.
Remove passenger dash liner 76.46.15
Remove passenger fascia closing panel 76.46.27.
Remove drivers fascia closing panel 76.46.28.
Remove the centre veneer panel 76.47.06.
Remove the centre vent outlet 76.15.48.
Remove the fascia board 76.46.01.
Remove the right and left hand **"A"** post lower trim pads 76.13.30.
Remove the sun visor 76.10.47.
Remove the interior lamp assembly 86.45.12.
Displace the roof lining for access to the cable harness.
Displace the cable harness from the roof and " A post.
Disconnect the block connectors at the base of the " A post.
Remove the " A post earth bolt and disconnect the earth lead.

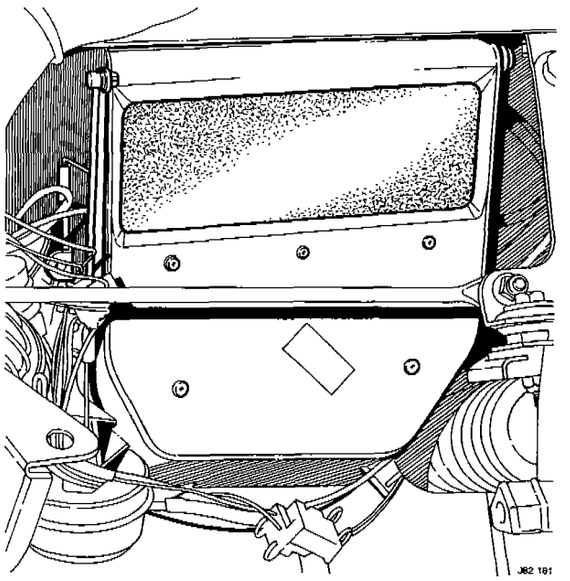


Fig 1

Remove the cover of the " A post aperture.
Withdraw and disconnect the door cable harness block connectors.
Disconnect the cable harness block connector from the footwell fusebox.
Displace the harness from the footwell.
Cut and remove the harness to bulkhead retaining strap.
Undo the bolts securing the steering column to bulkhead support bracket.
Displace the bracket from the bulkhead.
Displace the harness from the bracket.
Disconnect the brake switch block connector.
Displace the harness from the bracket.
Disconnect the blower motor block connector (Fig 1).
Displace the blower to heater unit trunking for access.
Remove the nut securing the earth terminal and disconnect the earth lead.
Displace the harness from the blower motor area.
Disconnect the **C.P.U.** cable harness block connectors.
Remove the screw securing the C.P.U. earth lead and disconnect the earth lead.
Remove the harness to bulkhead earth bolt and disconnect the earth lead.
Remove the harness to **"A"** post earth bolt and disconnect the earth lead.
Cut and remove the rachet straps securing the harness to the " A post.
Remove the " A post blanking plug.
Disconnect the door harness block connectors.
Displace the relays from the footwell mounting.
Disconnect cable harness block connector from the footwell fuse block,
Displace the harness from the footwell.
Displace the terminal post rubber boot.
Remove the nut securing the earth lead and remove the lead.
Remove the footwell vent from the heater unit.
Remove the gear lever surround finisher (Fig 2).

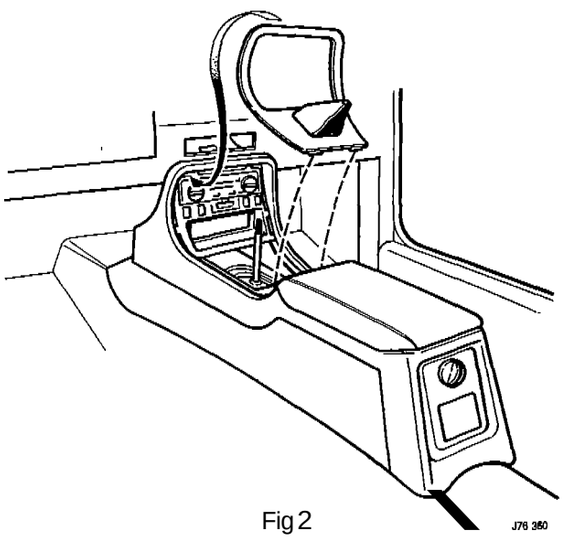


Fig 2

Remove the console finisher 76.25.19
Remove the screws securing the console ashtray and displace the ashtray for access.
Disconnect the cigar lighter cable harness block connector.
Remove the ashtray assembly.
Remove the centre console switch and clock module 86.80.13
Remove the console assembly 76.25.01.
Align the cable harness on the transmission tunnel.
Displace the seat relay bases from their mountings.
Disconnect the gear selector cable harness block connector.
Disconnect the gear linear switch cable harness block connector.
Remove the bolt securing the earth lead and disconnect the lead.
Cut and remove the rachet straps securing the cable harness to tunnel.
Peel back the carpet at the seat belt anchorages.
Disconnect the seat belt cable harness block connectors.
Remove both the front seat cushions 76.70.02.
Disconnect the seat heater and interior lamp cable harness block connectors.
Cut and remove the cable harness securing rachet straps.
Disconnect the handbrake switch cable harnes block connector.
Route the harness from the tunnel area under the heater unit into the passenger footwell.
Remove the screws securing the central processor and disconnect the earth lead.
Slacken the upper screw securing the processor, displace and remove the processor.
Remove the bolts securing the processor mounting bracket and remove the bracket.
Disconnect the blower motor cable harness block connector.
Remove the bulkhead earth terminal nut and disconnect the earth lead.
Cut and remove the harness to bulkhead rachet securing straps.
Displace and remove the cable harness.

Fitting the new harness

Fit and align the new harness to the vehicle bulkhead.
Secure the harness with rachet straps.
Route the harness under the heater unit to the tunnel area.
Route the seat heater and interior light harnesses and connect the block connectors.
Refit the seat cushions.
Secure the harness to tunnel with rachet straps.
Connect the tunnel earth leads and tighten the securing bolt.
Route the harness to the tunnel and secure with rachet straps.
Locate the powered seat relay bases to the support brackets.
Connect the gearbox linear switch block connector.
Connect the gearbox block connector.
Connect the earth leads, fit and tighten the securing bolt.
Connect the passenger blower motor block connector.
Connect the earth lead to bulkhead, fit and tighten the securing nut.

Fit the CPU bracket.
fit the CPU to the bracket and connect the block connectors.
Route the harness to the " A post area.
Connect leads to the terminal post.
Tighten the securing nut and position rubber boot over the terminal post.
Connect the passenger door harness block connectors.
Position the door harness block connectors into the " A post and fit the " A post finisher.
Connect the side harness block connectors.
Connect the " A post earth lead.
Route the harness to the passenger side fuse box and connect the fuse box block connector.
Connect the relay bases to mountings.
Secure the harness to the " A post with rachet straps.
Connect the engine management ECU block connectors.
Connect the earth lead to the CPU mounting bolt.
Route the harness around the steering column support bracket to the blower motor.
Connect the earth leads to the terminal.
Connect the drivers side blower motor block connector.
Route the harness through the bracket and secure the harness to the bulkhead with rachet strap.
Tighten the bracket securing bolts.
Connect the brake light switch block connector.
Route the harness to the roof console via the " A post.
Connect the "A" post block connectors.
Connect the door harness block connectors.
Route the block connectors into the " A post and fit the " A post finisher.
Route the lower harness to the fuse box.
Connect the fuse box block connector.
Connect the inertia switch block connector.
Connect the " A post earth lead.
Connect the interior light block connector and refit the roof console.
Refit the " A post lower trim pads, fascia, console, switch panel, ventilator, veneer panel, fascia closing panels and dash liners.
Reconnect the battery earth lead and test the operation of the electrical system of the vehicle.

3001B

ENGINE HARNESS

RENEW **86.70.21**

Open the bonnet and disconnect the battery earth lead.
Cut and remove the strap securing the multi-plug to the power brake hose.
Disconnect the multi-plug (1 Fig 1).
Disconnect the ignition amplifier multi-plug.
Disconnect the distributor to HT coil king lead.
Displace the rubber boot from the HT coil LT connectors.
Disconnect the LT leads from the HT coil.
Remove the bolts securing the Ht coil and displace the coil.
Disconnect the earth lead from the coil.
Remove the screw securing the earth lead to the crush tube.
Cut and remove strap securing the crankshaft sensor harness to the engine harness.
Disconnect the multi-plug connector.
Cut and remove the strap securing harness to the cam shaft cover.
Disconnect the water temperature sensor (Fig 2).
Remove the front nut securing the harness support bracket and disconnect the earth lead.
Remove the strap securing the harness to the manifold.
Remove the strap securing the supplementary air valve multi-plug.
Disconnect the supplementary air valve multi-plug.
Disconnect the throttle potentiometer multi-plug.
Remove the nut securing the air flow meter earth lead and disconnect the lead.
Disconnect the air flow meter multi-plug connector.
Route the harness under the air flow meter.
Remove the air pump relay multi-plug rachet strap. Disconnect the multi-plug.
Displace the harness over the engine.
Slacken the engine breather pipe to cam cover securing clip.
Disconnect the breather pipe.
Remove the strap securing the breather heater multi-plug lead. Route the harness to the engine.
Cut and remove the harness to harness carrier securing straps (Fig 3).
Disconnect the starter motor multi-plug.
Disconnect the idle speed actuator connector.
Disconnect the injector leads (Fig 4).
Displace the harness from the harness carrier.
Remove the Battery 86.15.01.
Remove the nut securing the earth lead and disconnect the leads.
Remove the bolts securing the battery tray and remove the tray.
Remove the vacuum reservoir tank.
Cut and remove the securing the harness to the bulhead.
Disconnect the earth leads
Displace the rubber boot from the positive terminal post and remove the **tape.**
Disconnect the leads from terminal post.
Open the door and remove the passenger side dash liner.
Remove the main relay from the red socket and the pump relay from the yellow socket.
Displace the relay bases from the mounting panel.

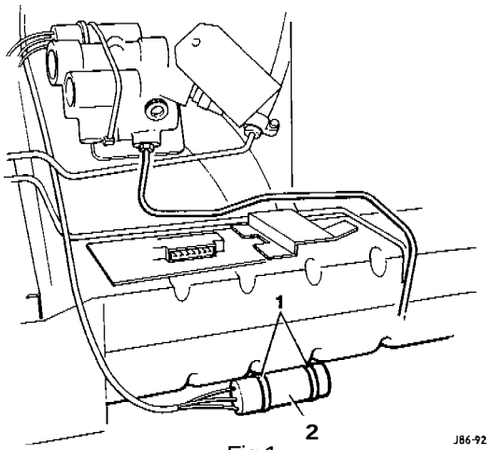


Fig 1

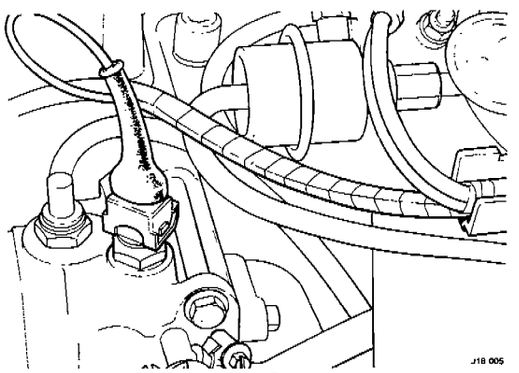


Fig 2

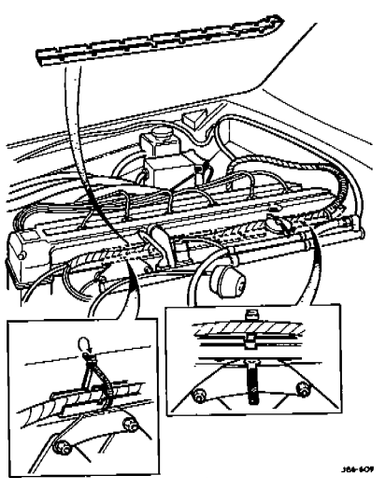


Fig 3

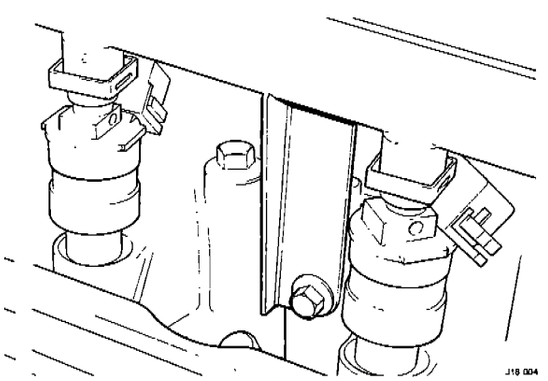


Fig 4

Disconnect the yellow multi-plug connectors (LB28/ LB27).
Cut and remove the strap securing the harness to body.
Disconnect the engine management block connectors from the ECU.
From the engine bay displace bulkhead cable harness grommet and remove the cable harness.
Fit the new harness to the vehicle and route the harness through the bukhead.
Connect the engine management block connectors.
Connect the yellow multi-plug block connectors.
Fit the relay bases to the mounting panel and refit the relays.
Secure the harness with rachet straps.
Refit the dash liner.
From the engine bay:- Fully seat the harness grommet to the bulkhead aperture.
Refit the vacuum reservoir and the battery tray.
Connect the positive lead, fit tape to the terminal post and fully seat the rubber boot.
Position the harness to the battery tray.
Connect the earth leads to the negative terminal.
Fit the negative battery lead to the terminal, fit and tighten the securing nut.
Refit the battery.
Route the harness over the engine.
Connect the starter motor multi-plug connector.
Secure the harness to the bulkhead with rachet straps (Fig **1**).
Route and secure the harness to the harness carrier with rachet straps.
Secure the carrier to brackets with rachet straps.
Route the breather heater connector to its position and secure with rachet strap.
Connect the injector leads.
Connect the coolant temperature sensor lead.
Connect the engine breather hose to the cam cover. Position and tighten the clip.
Connect the idle speed actuator multi-plug.
Connect the earth leads to the harness support bracket. Fit and tighten the securing nut.
Route the harness to the air flow meter and connect the multi-plug.
Connect the throttle potentiometer multi-plug.
Connect the supplementary air valve multi-plug.
Secure the multi-plug and harness to the manifold with a rachet straps.
Connect the air pump relay multi-plug at the oil cooler pipe and secure with a rachet strap.
Route the harness to the front of the cam cover and secure with a rachet strap.
Connect the crankshaft sensor and secure with a rachet strap.
Route the harness to the **HT** coil.
Connect the ignition amplifier multi-plug.
Connect the earth lead under the coil.
Fit and tighten the securing screw.
Fully seat coil to its mounting, position the capacitor to the coil, fit and tighten the securing screws.
Connect the LT leads to to the HT coil, Fit and tighten the securing nuts.
Connect the black and the yellow multi-plugs.
Secure the multi-plugs to the power brake hose with a rachet strap.
Connect the king lead to the HT coil.
Reconnect the battery, check the operation of all the relevent components and the engine performance.

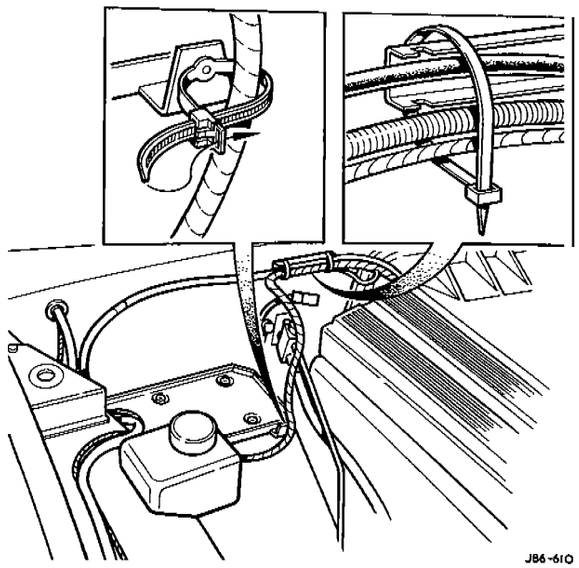


Fig **1**

DRIVERS DOOR HARNESS

RENEW ***86.70.07***

Open the bonnet and disconnect the battery earth lead.
Open the drivers door.
Remove the veneer trim panel 76.47.11.
Remove the upper door trim pad 76.34.02.
Remove the lower door trim pad 76.34.03.
Remove the " A post lower trim pad 76.13.30.
Remove drivers side dash liner 76.46.11.
Cut and remove the strap securing the door harness multi-plug.
Remove the multi-plug housing.
Cut and remove the strap securing the door harness to the lower door frame (Fig 1).
Disconnect the harness multi-plugs LB/RB 61 and LB/RB 62.
From inside the vehicle remove the " A post inner blanking plug.
Manouvre the blak multi-plugs into the vehicle from the " A post aperture.
Disconnect the multi-plugs.
Displace the door to " A post protection sleeve into the door.
Remove the harness tie strap at the door hinge.
Disconnect the door mirror multi-plugs and remove the door harness.
Fitting a new harness is the reversal of the removal procedure.

30016.

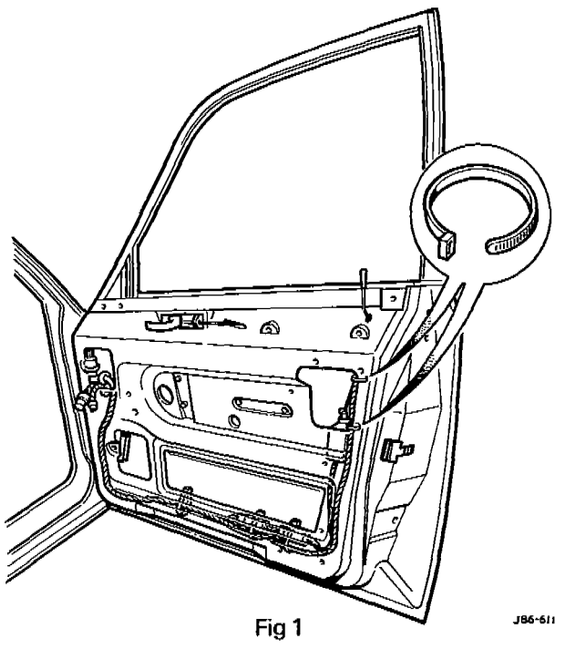


Fig 1 J86-611

PASSENGER DOOR HARNESS

RENEW ***86.70.08***

Open the bonnet and disconnect the battery earth lead.
Open the drivers door.
Remove the veneer trim panel 76.47.11.
Remove the upper door trim pad 76.34.02.
Remove the lower door trim pad 76.34.03.
Remove the " A post lower trim pad 76.13.30.
Remove drivers side dash liner 76.46.11.
Cut and remove the strap securing the door harness multi-plug.
Remove the multi-plug housing.
Cut and remove the strap securing the door harness to the lower door frame (Fig 2).
Disconnect the harness multi-plugs LB/RB 61 and LB/RB 62.
From inside the vehicle remove the "A" post inner blanking plug.
Manouvre the blak multi-plugs into the vehicle from the "A" post aperture.
Disconnect the multi-plugs.
Displace the door to " A post protection sleeve into the door.
Remove the harness tie strap at the door hinge.
Disconnect the door mirror multi-plugs and remove the door harness.
Fitting a new harness is the reversal of the removal procedure.

30016

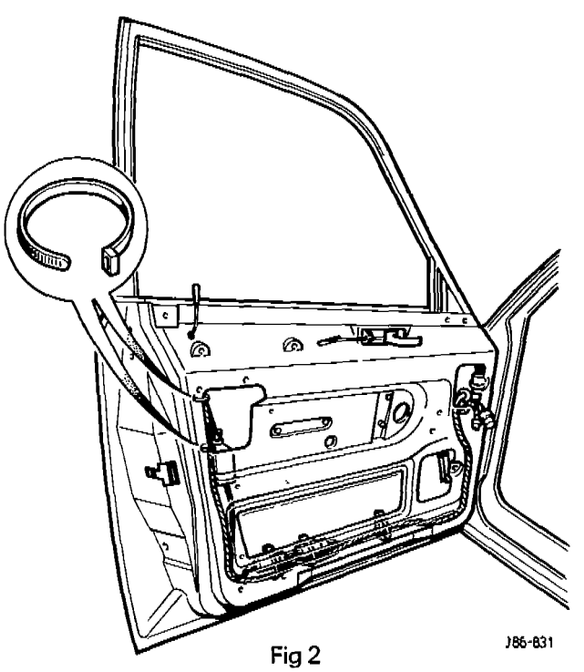


Fig 2 J86-631

REAR DOOR HARNESS

RENEW **86.70.47**

Open the bonnet and disconnect the battery earth lead.
Open the rear door.
Remove the veneer trim panel 76.47.12.
Remove the upper door trim pad 76.34.05.
Remove the lower door trim pad 76.34.06.
Move and recline the front seat fully forward.
Turn and release the clip securing the "B" post lower trim pad and displace the pad from its position.
Undo the seat belt reel lower securing bolt and displace the reel for access.
Remove the screws securing the "B" post inner harness guard and remove the guard.
Displace the harness from the "B" post.
Disconnect the multi-plugs.
Open the front door and close the rear door.
Displace the harness protection sleeve from the "B" post.
Displace the harness from the "B" post.
Displace the harness protection sleeve and harness into the rear door.
Open the rear door.
Displace the water curtain.
Remove the harness to door hinge bolts guide.
Remove the door upper harness finisher.
Cut and remove the harness to lower door securing straps (Fig 1).
Disconnect the black, yellow, green and blue multi-plug connectors.
Cut and remove the upper harness securing straps.
Remove the harness from the door.
Fit the new harness to the rear door.
Route the harness protector to the door aperture, thread the harness into the "B" post and fully seat the protector.
Connect the multi-plugs.
Fit the harness inner guard.
Fit and tighten the securing screws.
Position the seat belt reel.
Fit and tighten the securing bolt.
Fit the bolt finisher.
Position the "B" post lower trim **pad** and engage the securing clips.
Recline the seat to its original position and reposition the seat.
Route the upper door harness connectors.
Fit the harness finisher.
Route the harness to the lower hinge guide.
Fit and secure the guide.
Route the harness to the bottem of the door.
Connect the multi-plug connectors.
Secure the harness with rachet straps.
Reposition the water curtain.
Fit the lower and upper trim pads.
Fit the veneer panel.
Reconnect the battery earth lead.
Check operation of the relevent components.

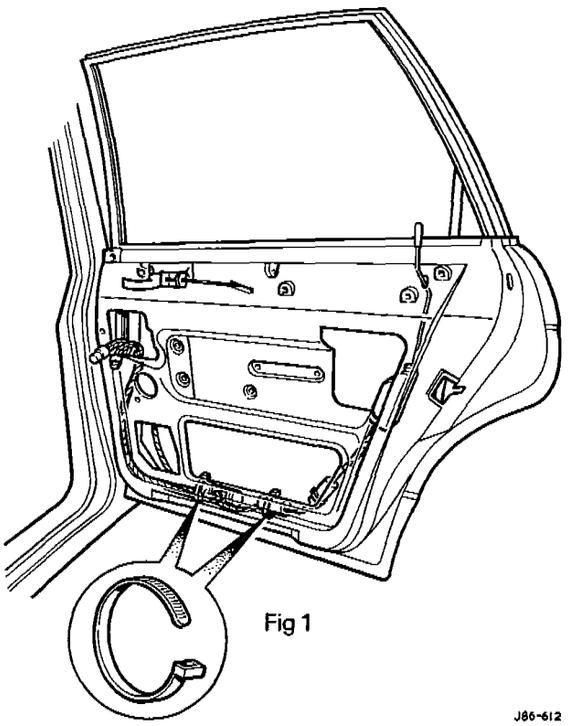


Fig 1

J86-612

3001B

POWERED SEAT LINK LEAD

RENEW **86-70-12**

Open the front doors and switch 'on' the ignition.
Motor front sears fully forward.
Switch 'off the ignition.
Console assembly – renew 76.25.01.
Front seat cushion – renew 76.70.02.
Reposition rear footwell carpet and insulation from below the drivers seat for access (Fig 1).
Disconnect the powered seat link lead multi-plug purple **P.**M.4.
Cut and remove the ratchet straps securing the link lead to the floor/transmission tunnel.
Reposition the link lead from below the drivers seat.
Reposition the rear footwell carpet and insulation from below passenger seat for access to the harness multi-plug.
Cut and remove the ratchet straps securing the harness.
Reposition the link lead from below the passenger seat.
Displace and remove the link lead from the vehicle.
Fit and align the new harness to transmission tunnel.
Reposition the lead below the passenger seat (Fig 2).
Connect the **mutti-plug** to the passenger seat harness.
Secure the harness to the floor/transmission tunnel with the ratchet straps.
Reposition the rear footwell carpet.
Reposition the link lead below the drivers seat.
Connect the drivers seat multi-plug.
Secure the harness to the floor/transmission tunnel with the ratchet straps.
Reposition the rear footwell carpet.
Refit the front seat cushions.
Refit the console assembly.
Switch 'on' the ignition and motor seats rearward.
Switch 'off the ignition and close the doors.

3001B

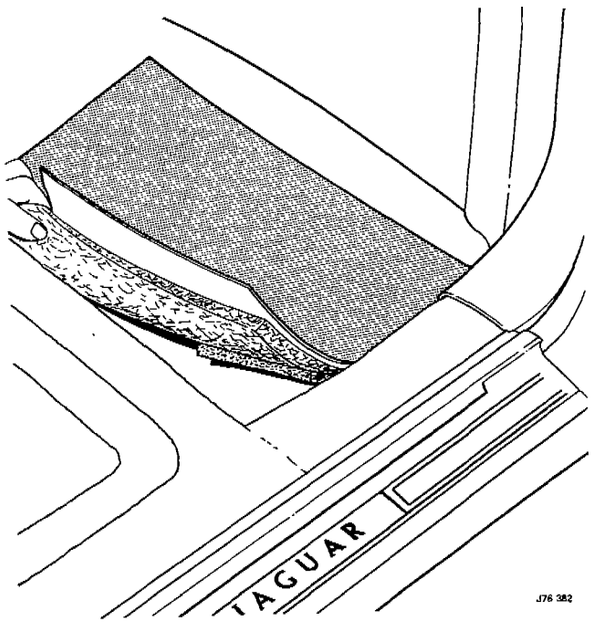


Fig 1

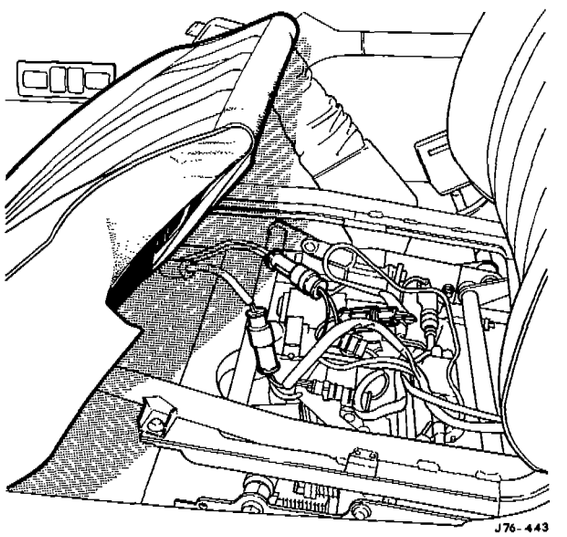


Fig 2

POWERED SEAT HARNESS

RENEW **86.70.11**

Remove the front seat cushion 76.70.02
Position the seat fully forward.
Open the bonnet and disconnect the battery earth lead.
Reposition the rear footwell carpet and insulation for access to the harness connection.
Remove the harness to floor retaining caps
Remove the retaining plate.
Disconnect the seat harness to link harness purple, red and black multi-plugs.
Remove the harness to seat bracket securing screw.
Reposition the harness from the retain clip.
Reposition the harness multi-plugs from the retaining clips.
Note and disconnect the multi-plugs.
Note and disconnect the red and blue wires from the front rise and fall motor.
Note and disconnect the yellow and white wires from the rear rise and fall motor.

Cut and remove the rachet strap securing the seat belt cable to the seat frame.
Disconnect and remove the harness from the seat belt multi-plug.
Fitting the new harness is thr reversal of the removal procedure.

3001B

INTERIOR READING LAMP LINK HARNESS(SEAT)

RENEW **86.70.23**

Open the front and rear doors.
Front seat cushion – renew 76.70.02.
Front seat back finisher – renew 76.70.03.
Cut and remove ratchet straps securing the harness to the seat frame.
Disconnect the harness multi-plug (black Econoseal).
Reposition the harness to the rear of the seat.
Front seat headrest – Renew
Displace and remove the harness from the seat.
Position the new harness through the head rest mounting hole.
Reposition the harness to the seat frame and through the lower access hole.
Secure seat harness to frame with the ratchet straps.
Reposition the harness to seat motors.
Connect the harness multi-plug.
Reposition the multi-plug to retaining clip.
Reposition the harness to the lower frame.
Secure the harness with ratchet straps.
Refit the head rest.
Refit the seat back finisher.
Refit the seat cushion and close the doors.

3001B

FRONT AXLE HARNESS

RENEW **86.70.15**

Open the bonnet and disconnect the battery earth lead.
Cut and remove the rachet strap securing the front axle harness multi-plug to the side harness.
Disconnect the harness to side harness black multi-plug.
Jack up the vehicle and place on **1** stand.
Remove the road wheel **74.20.01**
Cut and remove the rachet strap securing the harness to the brake hose **(Fig 1)**.
Displace the harness from the retaining clip.
Disconnect **and** remove the front axle harness from the brake pad warning multi-plug
Fitting **a** new harness is the reversal *of* the removal procedure

3001B

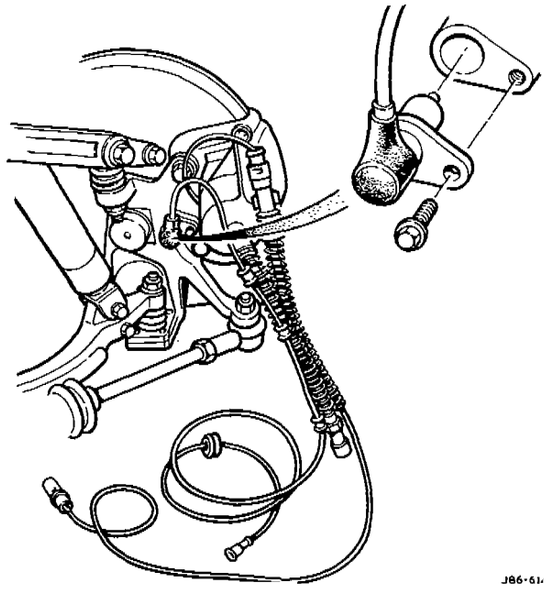


Fig **1**

REAR AXLE HARNESS (Right Hand)

RENEW **86.70.16**

Open the bonnet and disconnect the battery earth lead.
Open the luggage compartment and remove the spare wheel.
Remove the jack and racet handle.
Remove the luggage compartment front liner.
Cut and remove the ratchet strap securing the multi-plug to the fuel tank strap (Fig 1).
Disconnect the right hand black multi-plug.
Displace the grommet through the body to the axle area.
Reposition the harness and multi-plug through the body.
Jack up and place the vehicle on two stands.
From below disconnect the harness to brake pad multi-plug connector (Fig 2).
Cut and remove the rachet strap securing the harness to the lower wishbone.
Displace the cover from the ride height sensor.
Disconnect the multi-plug connector.
Cut and remove the rachet strap securing the ride height sensor harness to suspension arm.
Displace and remove the harness.
Fitting the new harness is the reversal of the removal procedure.

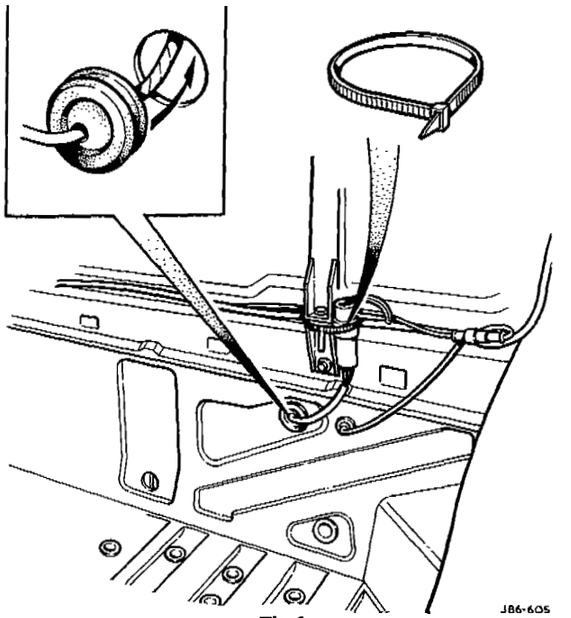


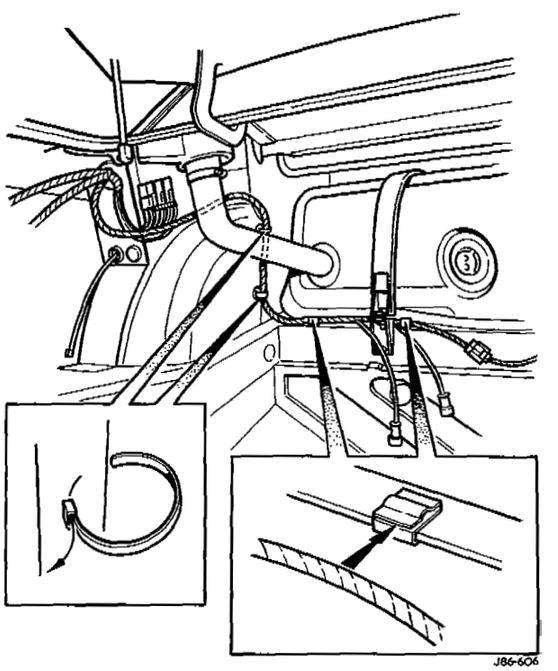
Fig 1

3001B

REAR AXLE HARNESS (Left Hand)

RENEW **86.70.17**

Open the bonnet and disconnect the battery earth cable.
Open thee luggage compartment and remove the spare wheel.
Remove the jack and rachet handle.
Cut and remove the rachet strap securing the multi-plug to the fuel tank strap.
Disconnect the black econoseal multi-plug connector.
Displace the grommet through to the axle area.
Reposition the harness and mylti-plug through the body.
Jack up and place the vehicle on two stands.
From below Disconnect the harness to brake pad multi-plug connector.
Cut and remove the rachet strap securing the harness to the suspension assembly.
Displace and remove the harness.
Fitting the new harness is the reversal of the removal procedure.



3001B

MANUAL TRANSMISSION SWITCH LINK HARNESS

RENEW **86.70.19**

Jack up the vehicle and place on 2 stands.
Reposition the link harness from behind foam pad for access.
Note, and disconnect the gearbox switch multi-plugs (red and yellow Econoseal) red male to yellow female. Yellow male to black female.
Tie a suitable draw string to the harness link lead.
Open the door.
Undo and remove the gear lever knob and locking nut.
Displace and remove the gear lever surround veneer panel.
Displace the gearbox link harness grommet.
Disconnect the link harness multi-plug (green P.M.**D.**H.)
Reposition the harness/draw string into the vehicle from the gearbox area.
Cut the draw string from the harness.
Place the harness aside.
Position and tie the new harness to draw string.
Reposition the link harness multi-plug through the gearbox panel.
From below draw the harness behind the gearbox pad into position.
Cut and remove the draw string.
Connect the harness multi-plugs.
Reposition the multi-plugs behind the foam.
Lower the vehicle from the stands.
Fit and fully seat the link harness grommet.
Connect the link harness multi-plug.
Fit and fully seat surround veneer panel.
Fit and tighten the gear lever knob and lock nut.
Close the door.

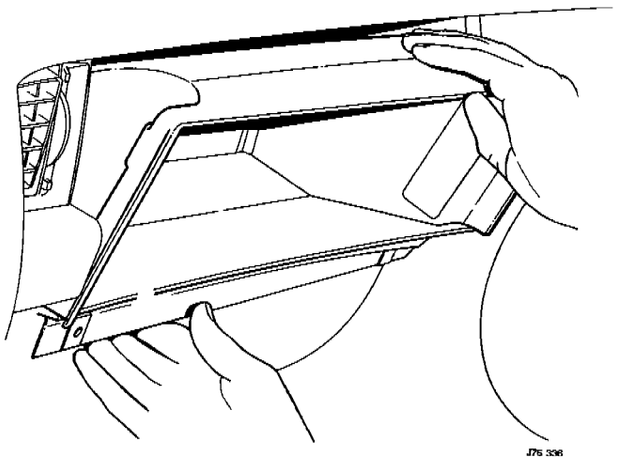


Fig 1

3001B

GLOVE BOX LAMP HARNESS

RENEW **86-70-24**

Open the door
Glove box – renew 76.52.03.
Note, and disconnect the glove box lamp and switch Lucar connectors.
Undo and remove harness to the glove box 'P clip securing nut/bolt.
Cut and remove the harness to glove box ratchet strap.
Place the harness aside.
Fit and align the new harness to the glove box.
Fit and tighten the 'P' clip securing nut/bolt.
Connect the harness to the lamp/switch lucars.
Secure the harness to glove box with ratchet strap.
Refit the glove box assembly (Fig 1) and close the door.

3001B

BONNET LAMP LINK HARNESS

RENEW ***86-70-26***

Open the door
Undo but do not fully remove the bonnet lamp securing screws.
Displacethe bonnet lamp assemblies for access.
Undo and remove the bonnet insulation pad lower securing screws.
Repositionthe padfor access.
Disconnect both the bonnet lamp multi-plugs (black Econoseal).
Cut and removethe harnessto the bonnet ratchet strap.
Repositionthe harnessfrom behind the bonnet pad.
Cut and remove the ratchet straps securing the harness and multi-plug to front closing panel.
Disconnectthe multi-plug (red Econoseal).
Displacethe grommetfrom the panel.
Reposition the harness/multi plug through the body panel and remove.
Position the new harness/multi-plug through the body panel.
Fully seat the grommetto the panel.
Secure the harness and multi-plug with the ratchet straps.
Repositionthe harness behind the bonnet pad.
Connectthe harnessto the bonnet lamp multi-plugs.
Secure the harnessto the bonnet with ratchetstrap.
Repositionthe bonnet pad.
Fit and tighten the padsecuring clips.
Position and seat lights to the bonnet
Tighten the lightsecuring screws and close the bonnet.

3001B

STARTER MOTOR LINK LEAD

RENEW **86.70.31**

Open the bonnet
Starter motor – renew 86.60.01.
Undo and remove the link lead to the starter solenoid securing screws.
Place link lead aside.
Fit and align the new link leadto the starter solenoid
Fit and tighten the securing screws
Refitthe starter motor
Close bonnet.

3001B

HEATED BACK LIGHT EARTH LEAD

RENEW *86-70-32*

Open the rear door
Rear quarter upper trim pad-left hand – renew 76.13.13.
Displace and remove the tape securing earth lead to the body panel.
Disconnect the earth lead to the heated back light lucar
Undo and remove the earth lead securing screw (Fig 1).
Displace and remove the earth lead.
Fit and align the new earth lead.
Fit and tighten the securing screw.
Connect the earth lead to heated back light lucar.
Secure the lead with tape.
Refit the rear quarter trim and close the door.

30018

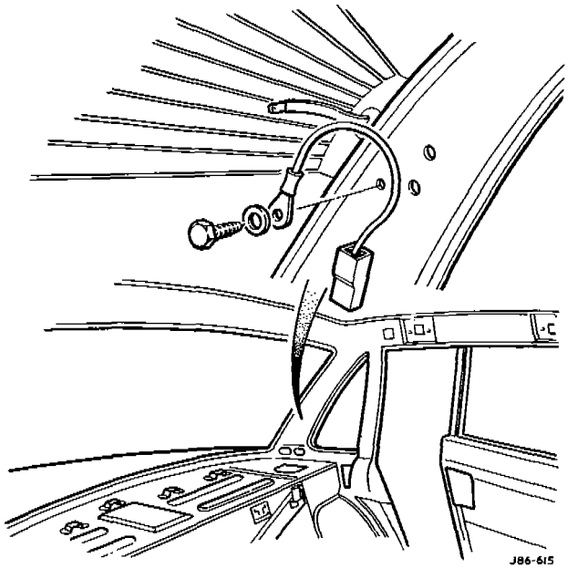


Fig 1

STEERING COLUMN HARNESS

RENEW 86.70.34

Open the bonnet and disconnect the battery earth lead.
.Open the car door.
Remove the steering wheel 57.60.01.
Remove the driver side dash liner 76.46.11.
Remove upper steering column cowl 76.46.02.
Remove lower steering column cowl 76.46.03.
Remove the screw securing the steering column harness carrier.
Displace the carrier for access.
Disconnect the block connector d.
Disconnect the main cable harness block connector.
Remove the harness from the vehicle.
Remove the clips (Fig 2) retaining the harness to the bracket.
Remove the bolt securing the "P" clip securing the harness the bracket.
Remove the "P" clip.
Remove the bracket from the harness.

Fitting a new steering column harness is the reversal of the removal procedure.
Reconnect the battery earth lead and check operation of all relevant components.

30018

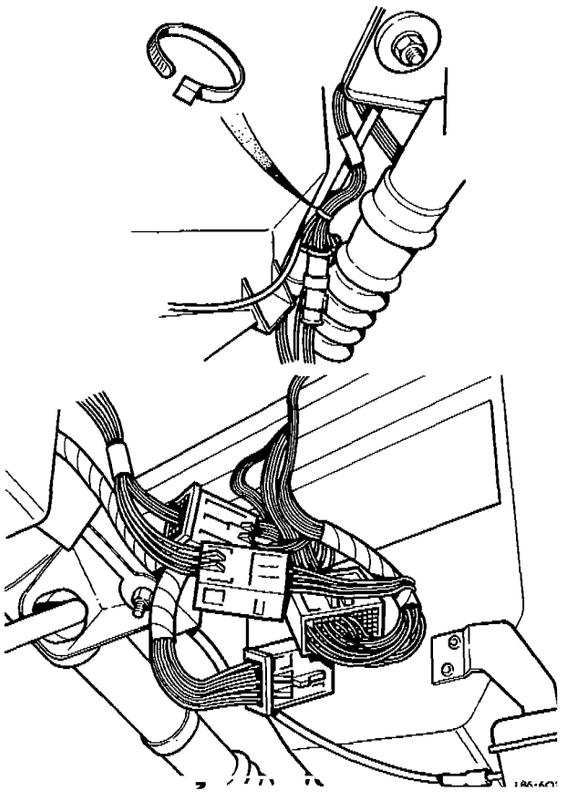


Fig 2

STARTER TO ALTERNATOR LINK LEAD

RENEW **86.70.36**

Open the bonnet and disconnect the battery earth lead.
Remove the air pump 17.25.07
Remove the link lead to starter motor securing nut (Fig 1).
Reposition the lead from the starter motor terminal.
Remove the link lead to alternator securing nut.
Displace and remove the harness from the engine compartment.
Fitting the new harness is the reversal of the removal procedure.

30018

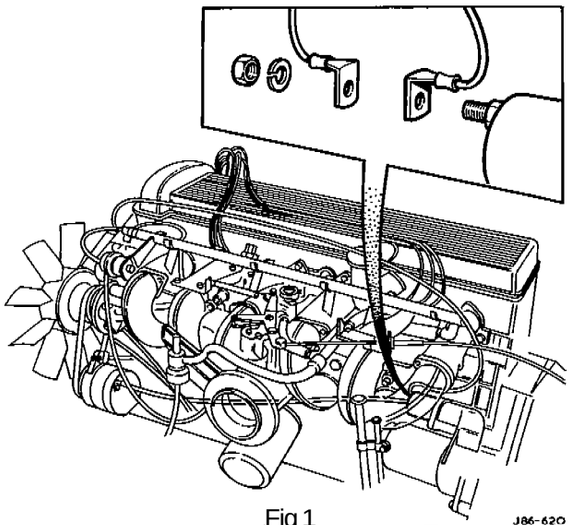


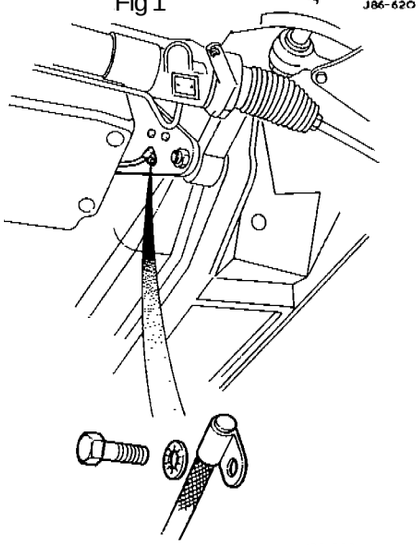
Fig 1 J86-620

ENGINE EARTH LEAD

RENEW ***86.70.38***

Open the bonnet and disconnect the battery earth lead.
Jack up and place the front of the vehicle on two stands.
From below remove the bell housing nut securing the earth lead.
Remove the rear mounting bolt securing the earth lead to the front cross member.
Displace and remove the earth lead (Fig 2).
Fitting the new earth lead is the reversal of the removal procedure.

3001B



J86-600

Fig 2

A.B.S. EARTH LEAD

RENEW ***86.70.39***

Open the bonnet and disconnect the battery earth lead.
Remove the A.B.S. modulator earth lead securing nut (Fig 3).
Reposition the lead from the modulator stud.
Remove the earth lead to mounting bracket securing bolt.
Displace and remove the earth lead.
Fitting the new earth lead is the reversal of the removal procedure.

3001B

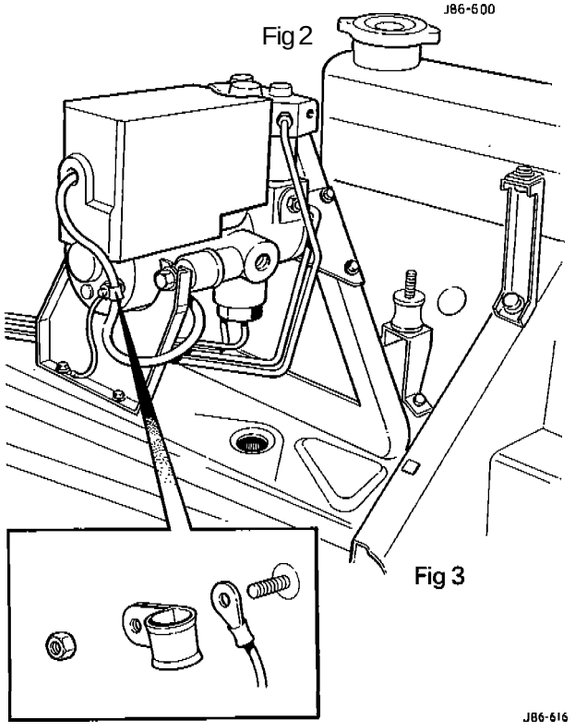


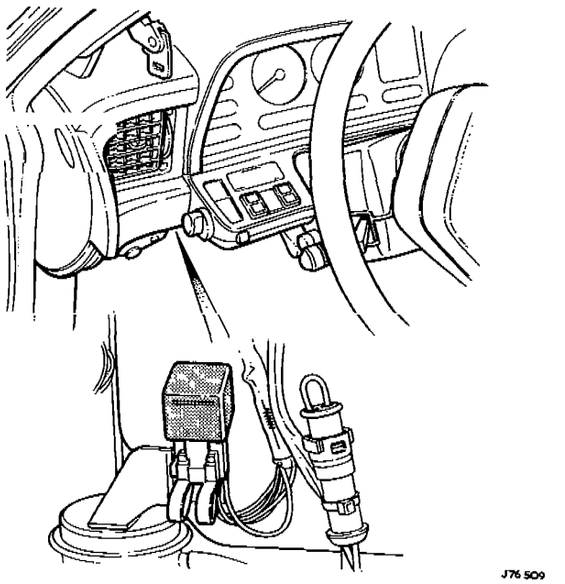
Fig 3

J86-616

FUEL PUMP LINK HARNESS

RENEW **86.70.20**

Open the bonnet and disconnect the battery earth lead.
Jack up left hand rear of vehicle and place on a stand.
Remove the left hand rear road wheel.
From the wheel arch displace the insulation boots from the fuel pump terminals.
Remove the fuel pump terminal nuts and reposition the harness wires from the fuel pump terminals.
Open the rear door and remove the rear seat cushion 76.70.37.
Reposition the seat cushion insulation pad for access to the fuel pump harness multi-plug connector.
Remove the foam pad (grommet).
Cut and remove harness to side harness ratchet strap.
Displace the harness to body grommet.
Reposition the harness through the body.
Disconnect the fuel pump harness black multi-plug connector.
Displace and remove the harness.
Fitting the new harness is the reverse of the removal procedure.



J76 5009

Fig 1

30018

REVERSE INHIBIT RELAY – PASSIVE RESTRAINT

RENEW **86.55.84**

Open the drivers door.
Remove the drivers side dash liner.
Displace the relay/multi plug assembly from the mounting bracket (Fig 1).
Remove and discard the relay.
Fit a new relay to the multi plug. Fit the assembly to the mounting bracket.
Refit the dash liner. Close the door.

3001B

CENTRAL PROCESSOR UNIT – PASSIVE RESTRAINT

RENEW **86.55.85**

Open the drivers door. Remove the drivers side dash liner.
Cut and remove the harness ratchet strap. Disconnect the unit multi plugs. Remove the unit/bracket securing bolts, remove and discard the unit (Fig 1).
Fit a new unit to the instrument pack mounting bracket. Fit and tighten the securing bolts.
Connect the multi plugs. Secure the harness with a new ratchet strap.
Refit the dash liner. Close the door.

3001B

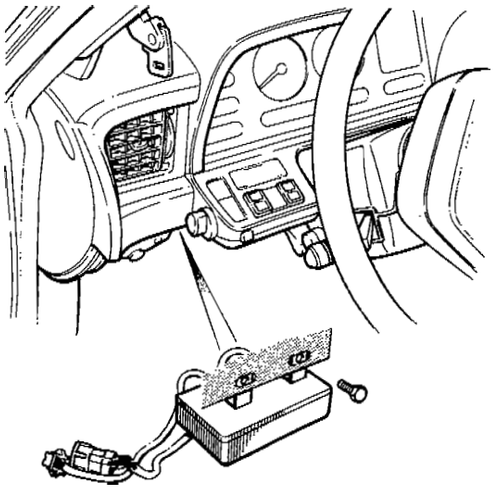


fig 1

INFRA-RED DOOR LOCKING RECEIVER

RENEW **86.55.35**

Remove the interior light console.
Displace the infra-red receiver (Fig 2). Disconnect the multi plug. Remove the receiver.

Fit the new receiver to position, connect the multi plug, and secure the receiver.
Refit the light console.

3001B

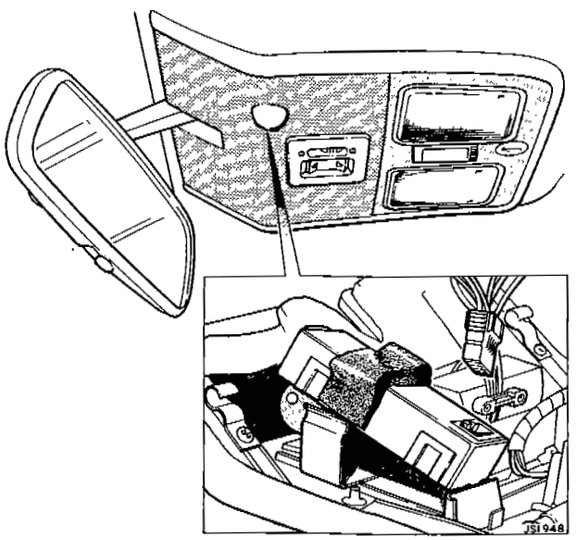


Fig 2

SEAT ENTRY SWITCH LINK HARNESS

RENEW ***86.70.48***

Open the door.
Switch the ignition on and motor the seat fully forward.
Switch the ignition off.
Open the rear door and remove the bolts securing the seat.
Remove the carpet and the rear footwell front soud deadening insulation pad.
Displace the seat harness clamp retaining plate.
Switch on the ignition and motor the seat rearwards.
Switch off the ignition.
Remove the seat cushion 76.70.11
Displace the forward and reverse harness multi plugs from the securing clips.
Disconnect the rnulti plugs (Black Econoseal).
Remove the screw securing the rnulti plug clip.
Remove the retaining clip.
Reposition the main harness retaining clamp plate.
Remove the bolt/nut securing the lower retaining plate.
Reposition the plate for access to the harness.
Carefully cut the tape securing the seat entry harness to the main harness.
Reposition the seat entry harness under the seat.
Disconnect the multi plug and discard the harness.
Reverse the removal procedure to refit the replacement harness.

3001B

BOOT LID RELEASE MOTOR

RENEW **86.25.54**

Open the boot lid.
Remove the release motor securing bolts.
Reposition the release motor from the boot lid for access.
Disconnect the motor harness motor multi plug.
Remove the motor from the link rod.
Remove the motor mounting securing screws and discard the motor.
Reverse the removal procedure to fit a replacement motor.

3001B

COMBINATION SWITCH

RENEW **86.65.55**

Open the door.
Release the steering column adjustment lever.
Position the column in its fully extended condition.
Lock the column in this position with the lever.
Remove the steering wheel 57.60.01.
Remove the rheostat switch knob and remove the screws securing the column lower nacelle.
Remove the lower nacelle.
Remove the screws securing the upper nacelle and remove the nacelle.
Remove the screws securing the left hand connector mounting plate.
Reposition the plate for access to the flasher switch harness multi plug.
Disconnect the multi plug.
Remove the bolt securing the switch and remove the switch.

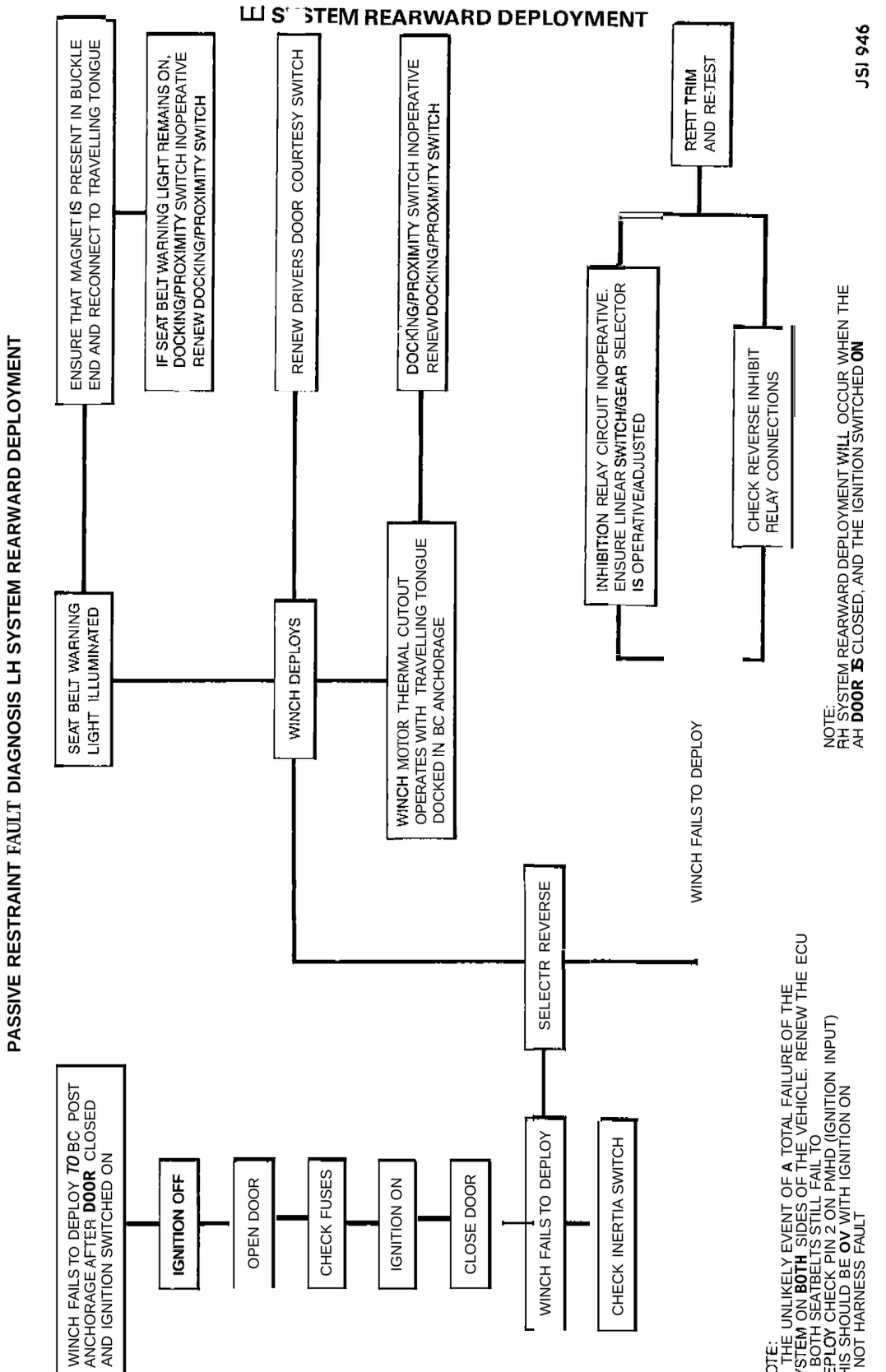
Reverse the removal procedure to fit a replacement switch.

3001B

PASSIVE RESTRAINT SYSTEM

FAULT DIAGNOSIS

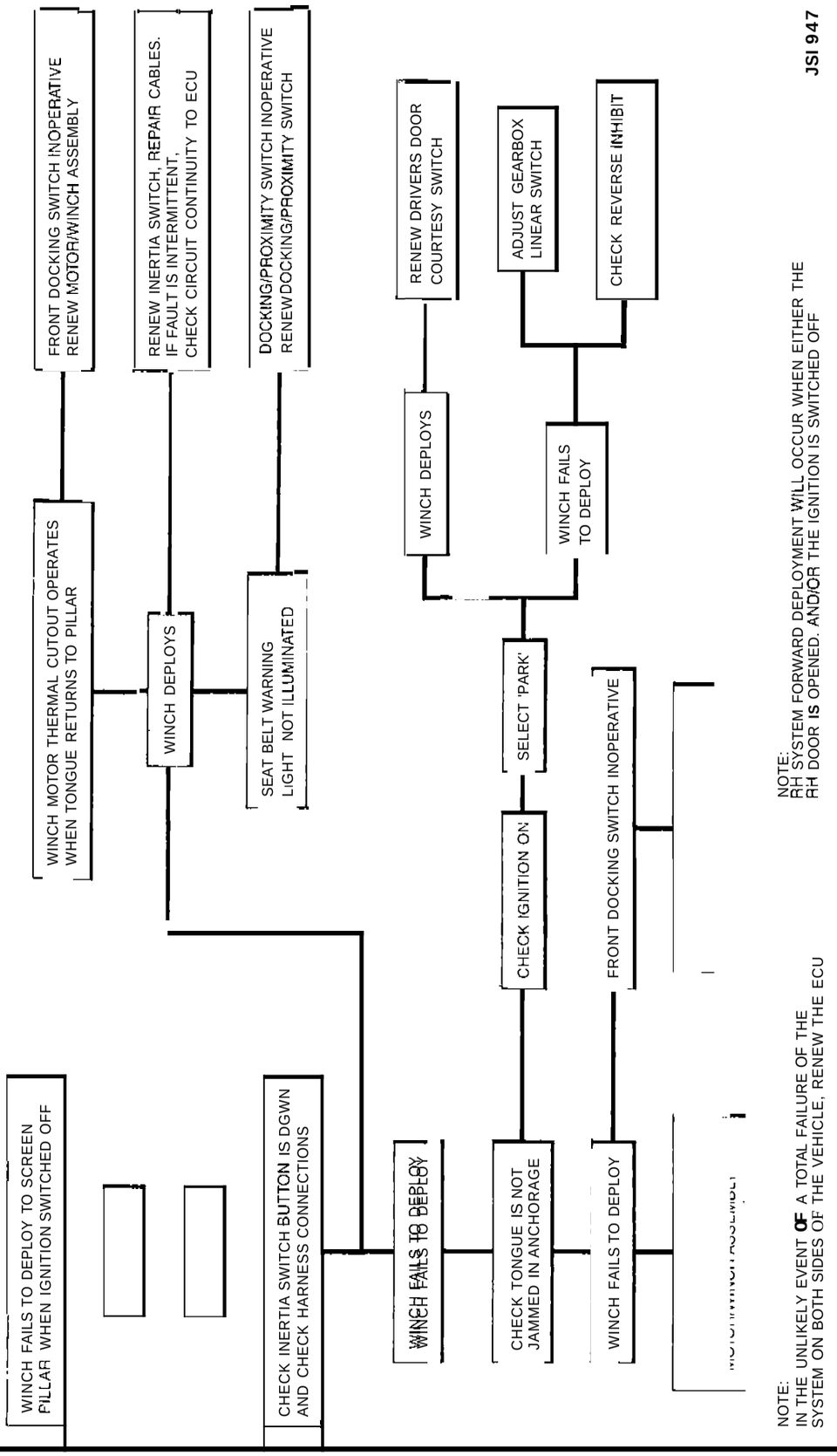
86.55.00


PASSIVE RESTRAINT FAULT DIAGNOSIS LH SYSTEM REARWARD DEPLOYMENT
LH SYSTEM REARWARD DEPLOYMENT
JSI 946
WINCH FAILS TO DEPLOY TO BC POST ANCHORAGE AFTER DOOR CLOSED AND IGNITION SWITCHED ON
IGNITION OFF
OPEN DOOR
CHECK FUSES
IGNITION ON
CLOSE DOOR
WINCH FAILS TO DEPLOY
CHECK INERTIA SWITCH
SELECTR REVERSE
WINCH FAILS TO DEPLOY
SEAT BELT WARNING LIGHT ILLUMINATED
ENSURE THAT MAGNET IS PRESENT IN BUCKLE END AND RECONNECT TO TRAVELLING TONGUE
IF SEAT BELT WARNING LIGHT REMAINS ON, DOCKING/PROXIMITY SWITCH INOPERATIVE RENEW DOCKING/PROXIMITY SWITCH
WINCH DEPLOYS
RENEW DRIVERS DOOR COURTESY SWITCH
WINCH MOTOR THERMAL CUTOUT OPERATES WITH TRAVELLING TONGUE DOCKED IN BC ANCHORAGE
DOCKING/PROXIMITY SWITCH INOPERATIVE RENEW DOCKING/PROXIMITY SWITCH
INHIBITION RELAY CIRCUIT INOPERATIVE. ENSURE LINEAR SWITCH/GEAR SELECTOR IS OPERATIVE/ADJUSTED
CHECK REVERSE INHIBIT RELAY CONNECTIONS
REFIT TRIM AND RE-TEST
NOTE:
RH SYSTEM REARWARD DEPLOYMENT WILL OCCUR WHEN THE AH DOOR IS CLOSED, AND THE IGNITION SWITCHED ON
NOTE:
N THE UNLIKELY EVENT OF A TOTAL FAILURE OF THE
YSTEM ON BOTH SIDES OF THE VEHICLE. RENEW THE ECU
E BOTH SEATBELTS STILL FAIL TO
EPLOY CHECK PIN 2 ON PMHD (IGNITION INPUT)
HIS SHOULD BE 0V WITH IGNITION ON
E NOT HARNESS FAULT

PASSIVE RESTRAINT SYSTEM

FAULT DIAGNOSIS — **LH SYSTEM FORWARD DEPLOYMENT** — **86.55.00**

PASSIVE RESTRAINT FAULT DIAGNOSIS LH SYSTEM FORWARD DEPLOYMENT


WINCH FAILS TO DEPLOY TO SCREEN PILLAR WHEN IGNITION SWITCHED OFF
CHECK INERTIA SWITCH BUTTON IS DGWN AND CHECK HARNESS CONNECTIONS
WINCH MOTOR THERMAL CUTOUT OPERATES WHEN TONGUE RETURNS TO PILLAR
FRONT DOCKING SWITCH INOPERATIVE RENEW MOTOR/WINCH ASSEMBLY
WINCH DEPLOYS
RENEW INERTIA SWITCH, REPAIR CABLES. IF FAULT IS INTERMITTENT, CHECK CIRCUIT CONTINUITY TO ECU
SEAT BELT WARNING LIGHT NOT ILLUMINATED
DOCKING/PROXIMITY SWITCH INOPERATIVE RENEW DOCKING/PROXIMITY SWITCH
WINCH FAILS TO DEPLOY
CHECK TONGUE IS NOT JAMMED IN ANCHORAGE
CHECK IGNITION ON
SELECT 'PARK'
WINCH FAILS TO DEPLOY
FRONT DOCKING SWITCH INOPERATIVE
WINCH DEPLOYS
RENEW DRIVERS DOOR COURTESY SWITCH
WINCH FAILS TO DEPLOY
ADJUST GEARBOX LINEAR SWITCH
CHECK REVERSE INHIBIT
NOTE:
IN THE UNLIKELY EVENT OF A TOTAL FAILURE OF THE SYSTEM ON BOTH SIDES OF THE VEHICLE, RENEW THE ECU
NOTE:
RH SYSTEM FORWARD DEPLOYMENT WILL OCCUR WHEN EITHER THE RH DOOR IS OPENED. AND/OR THE IGNITION IS SWITCHED OFF
JSI 947

PASSIVE RESTRAINT ECU OPERATIONAL TEST

The following procedure is designed to test the operation of the passive restraint ECU. Carry out each test in sequence in the order given below. If the system does not function in the manner described, refer to Jaguar Diagnostic System to locate the fault.

1 Enter car (drivers seat). Close and lock both front doors. Operate inertia switch. Doors will remain locked.

2 Insert key into ignition. Seatbelt will remain at A post.

3 Turn ignition on (position 2). Seatbelt will remain at A post.

4 Turn ignition off (position 0). Reset inertia switch. Turn ignition on (position 2). Both seatbelts will deploy to B post. 'Seatbelt not fitted' warning will activate until drivers seatbelt latches in B post.

5 Open drivers door. Drivers seatbelt will retract to A post.

6 Open passenger door. Passenger seatbelt will retract to A post.

7 Close drivers door. Drivers seatbelt will deploy to B post.

8 Close passenger door. Passenger seatbelt will deploy to B post.

9 Turn ignition off (position 0). Both seatbelts will retract to A post.

10 Turn ignition on (position 2). Both seatbelts will deploy to B post. Lock doors. Operate inertia switch. Doors will unlock. NOTE: It is necessary to detect the logic output from pin 1 LB86. Output should be logic 0.

11 Open drivers door. Drivers seatbelt will remain at B post.

12 Open passenger door. Passenger seatbelt will remain at B post.

13 Close both doors. Turn ignition off (position 0). Seatbelts will remain at B post.

14 Reset inertia switch. Seatbelts will retract to A post.

15 Turn ignition on (position 2). Detach drivers seatbelt from guide rail carrier. Seatbelt warning will activate.

16 Reconnect seatbelt to carrier. Seatbelt warning will de-activate.

17 End of test.

PASSIVE RESTRAINT ECU LOGIC

Truth tables have been provided for information and to aid diagnostic work. The following notes are also relevant.

1 With ignition on (position 2) and reverse gear selected, the drivers door switch input is inhibited.

2 The ECU must be capable of detecting an inertia switch operation with ignition 'on' AND 'off.

3 The ECU must be capable of discriminating **between** an inertia switch operation and 'ignition off.

4 Where indicated thus '*' logic input can be either 'logic 1' or 'logic 0; i.e. the output state described is not dependant upon that particular input.

– This combination of logic can only occur under fault conditions.

SEATBELT WARNING TRUTH TABLE

L.H. CHANNEL R.H. CHANNEL	SKT4 SKT 15	SKT8 SKT 13	SKT 7 SKT 14	SKT 6	SKT 10	SKT 2	SKT3
FUNCTION	DOOR SWITCH	REAR DOCK	FRONT DOCK	INERTIA SWITCH	BELT PROX	IGN. SWITCH	OUTPUT LOGIC
	★	0	★	★	0	0	LOW
	★	0	★	★	0	1	HIGH
			★	★	1	0	LOW
			★	★	1	1	HIGH
			★	★	0	0	LOW
			★	★	0	1	HIGH
	★		★	★	1	0	HIGH
	★	1	★	★	1	1	HIGH

RUN TO FRONT TRUTH TABLE

L.H. CHANNEL R.H. CHANNEL	SKT4 SKT 15	SKT 8 SKT 13	SKT 7 SKT 14	SKT 6	SKT 10	SKT2	PIN2 PIN 5	PIN3 PIN 6
FUNCTION	DOOR SWITCH	REAR DOCK	FRONT DOCK	INERTIA SWITCH	BELT PROX	IGN. SWITCH	OUTPUT VOLTAGE	
	0	★	0	0	★	0	0V	12v
≠	0	★	0	0	★	1	0V	12V
	0	*	0	1	★	0	0V	0V
	0	★	0	1	★	1	0V	0V
	0	★	1	0	★	0	0V	0V
≠	0	★	1	0	★	1	0V	0V
	0	★	1	1	★	0	0V	0V
	0	★	1	1	★	1	0V	0V
	1	★	0	0	★	0	0V	0V
≠	1	★	0	0	★	1	0V	12V
	1	★	0	1	★	0	0V	0V
	1	★	0	1	★	1	0V	0V
	1	★	1	0	★	0	0V	0V
≠	1	★	1	0	★	1	0V	0V
	1	★	1	1	★	0	0V	0V
	1	*	1	1	★	1	0V	0V

RUN TO REAR TRUTH TABLE

L.H. CHANNEL R.H. CHANNEL	SKT 4 SKT 15	SKT 8 SKT 13	SKT 7 SKT 14	SKT 6	SKT 10	SKT 2	PIN 2 PIN 5	PIN 3 PIN 6
FUNCTION	DOOR SWITCH	REAR DOCK	FRONT DOCK	INERTIA SWITCH	BELT PROX	IGN. SWITCH	OUTPUT VOLTAGE	
	0	0	★	0	★	0	0V	0V
≠	0	0	★	0	★	1	0V	0V
	0	0	★	1	★	0	0V	0V
	0	0	★	1	★	1	0V	0V
	0	1	★	0	★	0	0V	0V
≠	0	1	★	0	★	1	0V	0V
	0	1	★	1	★	0	0V	0V
	0	1	★	1	★	1	0V	0V
	1	0	★	0	★	0	12V	0V
≠	1	0	★	0	★	1	0V	0V
	1	0	★	1	★	0	0V	0V
	1	0	★	1	★	1	0V	0V
	1	1	★	0	★	0	0V	0V
≠	1	1	★	0	★	1	0V	0V
	1	1	★	1	★	0	0V	0V
	1	1	★	1	★	1	0V	0V

CENTRAL LOCKING TRUTH TABLE

L.H. CHANNEL R.H. CHANNEL	SKT 4 SKT 15	SKT 8 SKT 13	SKT 7 SKT 14	SKT 6	SKT 10	SKT 2	SKT 1
FUNCTION	DOOR SWITCH	REAR DOCK	FRONT DOCK	INERTIA SWITCH	BELT PROX	IGN. SWITCH	OUTPUT LOGIC
	★	★	★	0	★	0	HIGH
≠	★	★	★	0	★	1	HIGH
	★	★	★	1	★	0	LOW
	★	★	★	1	★	1	HIGH

PASSIVE RESTRAINT ECU CONNECTORS

The two ECU connectors, one PM4, the other PMHD are identified with their pin numbers in Fig 1.

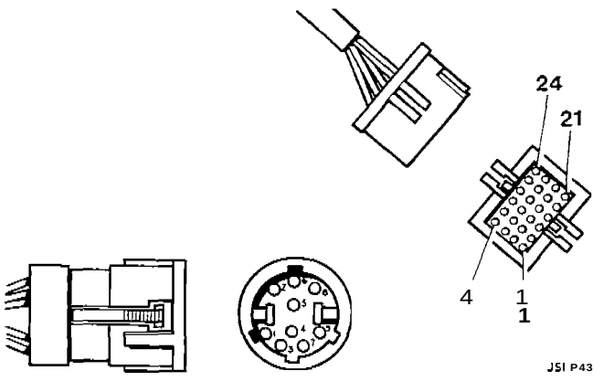


Fig 1

8-WAY PM4 CONNECTOR

Pin	Cable	Pin	Cable
1	NS LH system + 12V	6	YU RH motor positive to front
2	YG LH motor positive to rear	7	B Earth negative
3	YN LH motor positive to front	8	B Earth negative
4	– Blanked off	9	NS RH system + 12V
5	YU RH motor positive to rear		

24-WAY PMHD CONNECTOR

Pin	Cable	Pin	Cable
1	RO Central locking O/P	10	YR LH belt proximity
2	KB Ignition (negative)	11	YO RH belt proximity
3	SLG LH belt warning	12	–
4	S LH door switch I/P	13	YP RH rear dock switch
5	UR –	14	YS RH overtravel switch
6	GP Inertia switch I/P	15	O RH door switch
7	YB LH overtravel switch	16	BK/SB Logic earth
8	YLG LH rear dock switch	17	SU
9	GB –		

BULB FAIL MODULE – FRONT

CONNECTORS **86.55.00**

PIN	COLOUR	DIA.	FUNCTION
CONNECTOR PM49-WAY SOCKET (Fig **1**)			
1	Red/Orange	0.5	Fog
2	Blue/Pink	0.5	Dip
3	Blue/Slate	0.5	Main
4	Red	0.5	Side
6	White/Pink	0.5	Ignition
7	Brown/Orange	2.0	Main +
8	Brown/Pink	2.0	Fog/Dip +
9	Brown/Green	2.0	D.I/Side +
CONNECTOR PM49-WAY PLUG (Fig 2)			
1	Red/Orange	2.0	Fog
2	Red	0.5	Side
3	Green	0.5	D.I.
4	Yellow/Slate	0.5	D.I.
5	–	–	–
6	Yellow/Pink	0.5	Side Repeater
7	Pink	0.5	D.I. Fail
8	Pink/Slate	0.5	General Fail
9	Pink/Blue	0.5	Disconnect Earth Loop
S/BEAM AND H4 3WAY CONNECTOR (Fig 3)			
1	Blue/Slate	2.0	Main Beam
2	–	–	–
3	Black	2.0	Earth
S/BEAM AND H4 3 WAY CONNECTOR (Fig 4)			
1	Blue/White	2.0	Main Beam
2	Blue/Pink	2.0	Dip Beam
3	Black	2.0	Earth
EYELET RWC 51100351 (Fig *5*)			
1	**Black**	2.0	Earth
2	Black	2.0	Earth

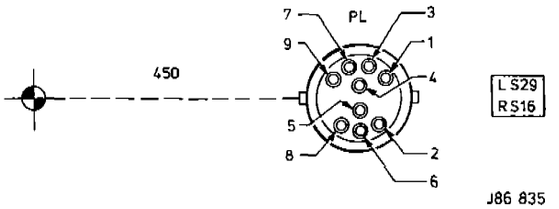


Fig 1

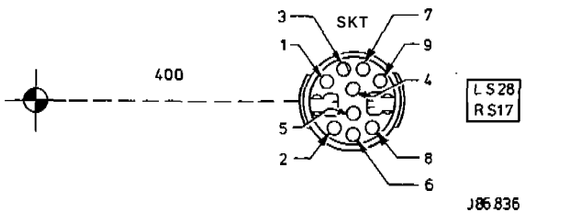


Fig 2

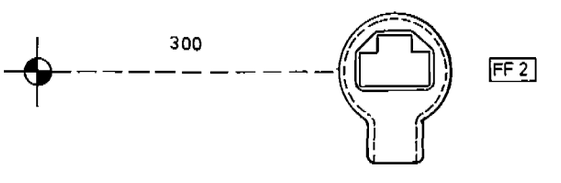


Fig 3

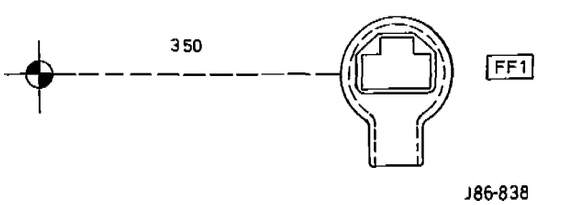


Fig 4

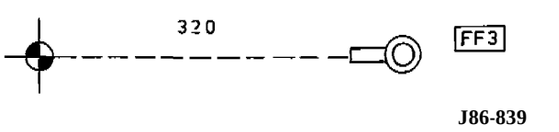


Fig 5

NOTES:

1 Cable lengths indicated on diagrams are from breakout point to connector mating face.

2 All module relays have a resistor/diode protection network (item 19 on wiring diagram). Diode value = 600V 1A. Resistor value = 82ohm 0.25W.

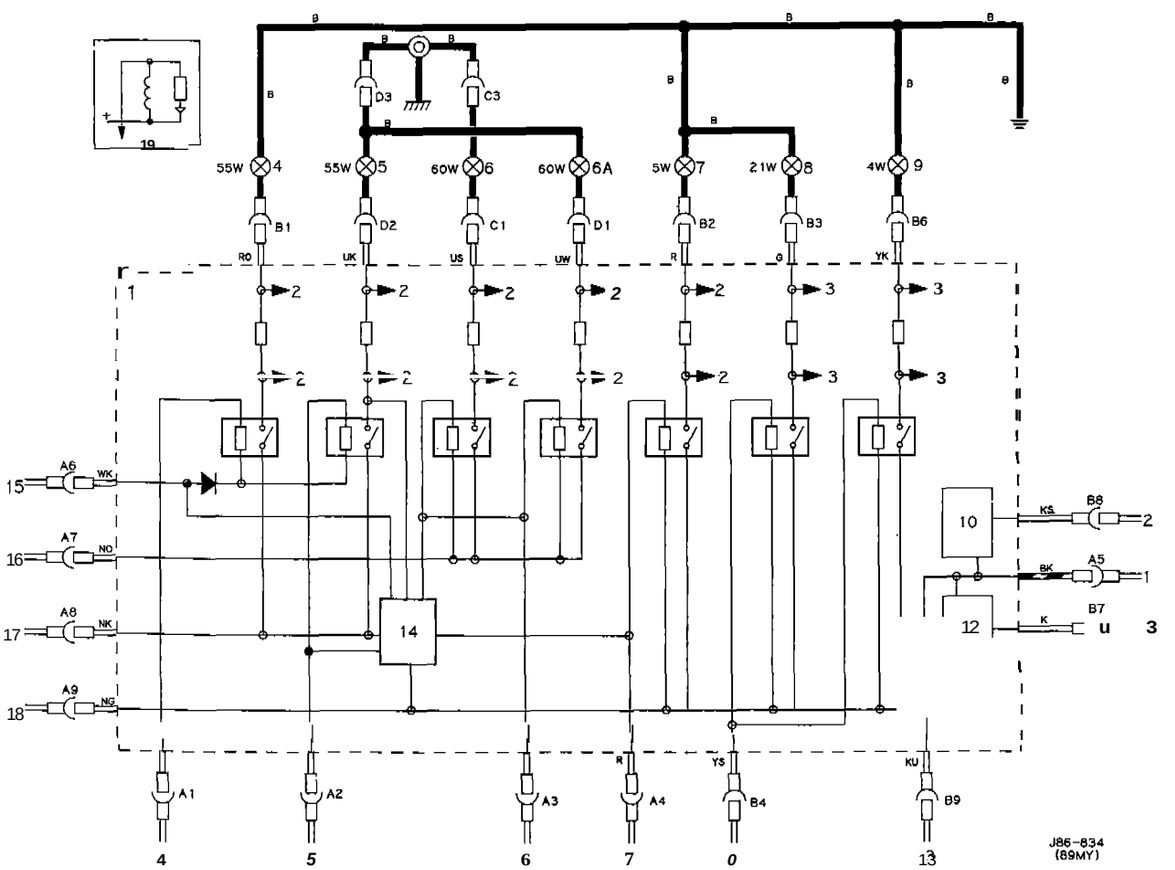
3 Bulb ratings are shown on the module cover.

4 DIM/DIP FUNCTION (UK ONLY): With the ignition and sidelights 'ON' dip beam headlights will be energised, but will only give a maximum of 10% light output. This value is maintained over the entire operating voltage range. The module senses correct operation of main beam headlamps without affecting circuit resistance used for bulb failure monitoring. When main beam is activated, the low power feed to dip beam is shut off.

BULB FAIL MODULE – FRONT

DIAGRAM **86.55.00**

Key to diagram
1 Module
2 General Fail
3 Direction Indicator Fail
4 Fog
5 Dip/
6 Main
6A Main/
7 Side
8 Direction Indicator
9 Direction Indicator Repeater
10 General Fail
11 Logic '0'
12 Direction Indicator Fail
13 Disconnect Earth Loop
14 Dim/Dip Pulse Width Modulator (UK ONLY)
15 Ignition
16 Main +
17 Fog/Dip +
18 Side/Direction Indicator +
19 Protection Network (Arrow goes to Switch)



BULB FAIL MODULE – REAR

CONNECTORS *86.55.00*

PIN	COLOUR	DIA.	FUNCTION
CONNECTOR PMHD 15-WAY SOCKET (Fig 1)			
1	Red/Blue	0.5	Fog
2	Slate/Lt Green	0.5	Reverse
3	Purple/Blue	0.5	stop
4	Red	0.5	Number Plate/Tail
5	Yellow/Slate	0.5	D.I.
6	Pink/Slate	0.5	General Fail
7	Pink	0.5	D.I. Fail
8	Black/Pink	0.5	Logic '0'
9	Green/Brown	0.5	Reverse
10	Green/Purple	0.5	stop
11	Red/Green	0.5	Tail
12	Yellow	0.5	D.I.
13	Red/Black	0.5	Number Plate
14	Pink/Blue	0.5	Disconnect Earth Loop
15	–	–	–
CONNECTOR PM4 4 WAY PLUG (Fig 2)			
1	Brown/Lt Green	2.0	Number Plate/Tail/ Side Marker (USA + CANADA ONLY)
2	White/Pink	0.5	Ignition +
3	–	–	–
4	–	–	–
5	Brown/Red	2.0	Reverse/Stop/D.I. /Fog+
6	Pink/Blue	0.5	Disconnect Earth Loop
CONNECTOR ECONOSEAL 2 WAY SOCKET (Fig 3)			
1	–	–	–
2	Black	0.5	Earth
3	Red/Black	0.5	Sidemarker (USA + CANADA ONLY)
CONNECTOR ECONOSEAL 3 WAY SOCKET (Fig 4)			
1	–	–	–
2	Black	0.5	Earth
3	Red/Yellow	0.5	Fog

NOTE: This connector has yellow self-adhesive tape. around the body.

EYELET RWC 51100327 (Fig 5)			
1	Black	0.5	Earth
2	Black	0.5	Earth

NOTES:

1 Cable lengths indicated on diagrams are from br kout p int to connector mating face.

2 All module relays have a resistor/diode protection network (item 23 on wiring diagram). Diode value = 600V 1A. Resistor value = 82ohm 0.25W.

3 Bulb ratings are shown on the module cover.

4 CONTROL **LOGIC** FUNCTION (USA AND CANADA ONLY):
1 **Stop** on/D.I. off – Both bulbs on.
11 Stop off/D.I. on – Dl flash both bulbs on
111 Stop/D.I on – Flash D.I./both bulbs.

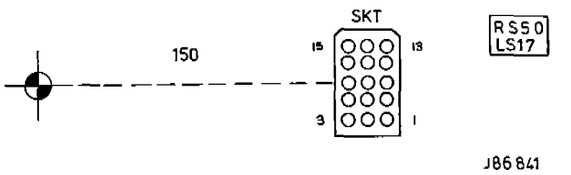


Fig 1

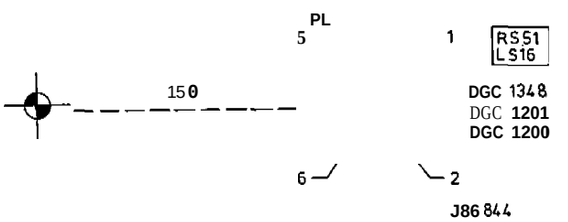


Fig 2

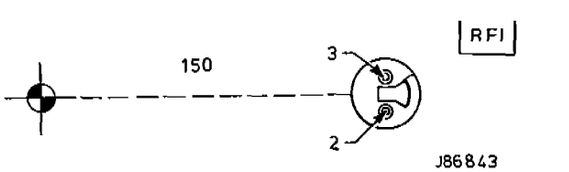


Fig 3

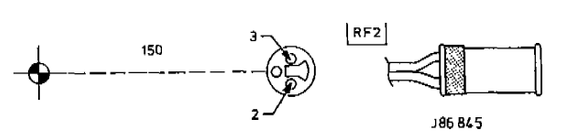


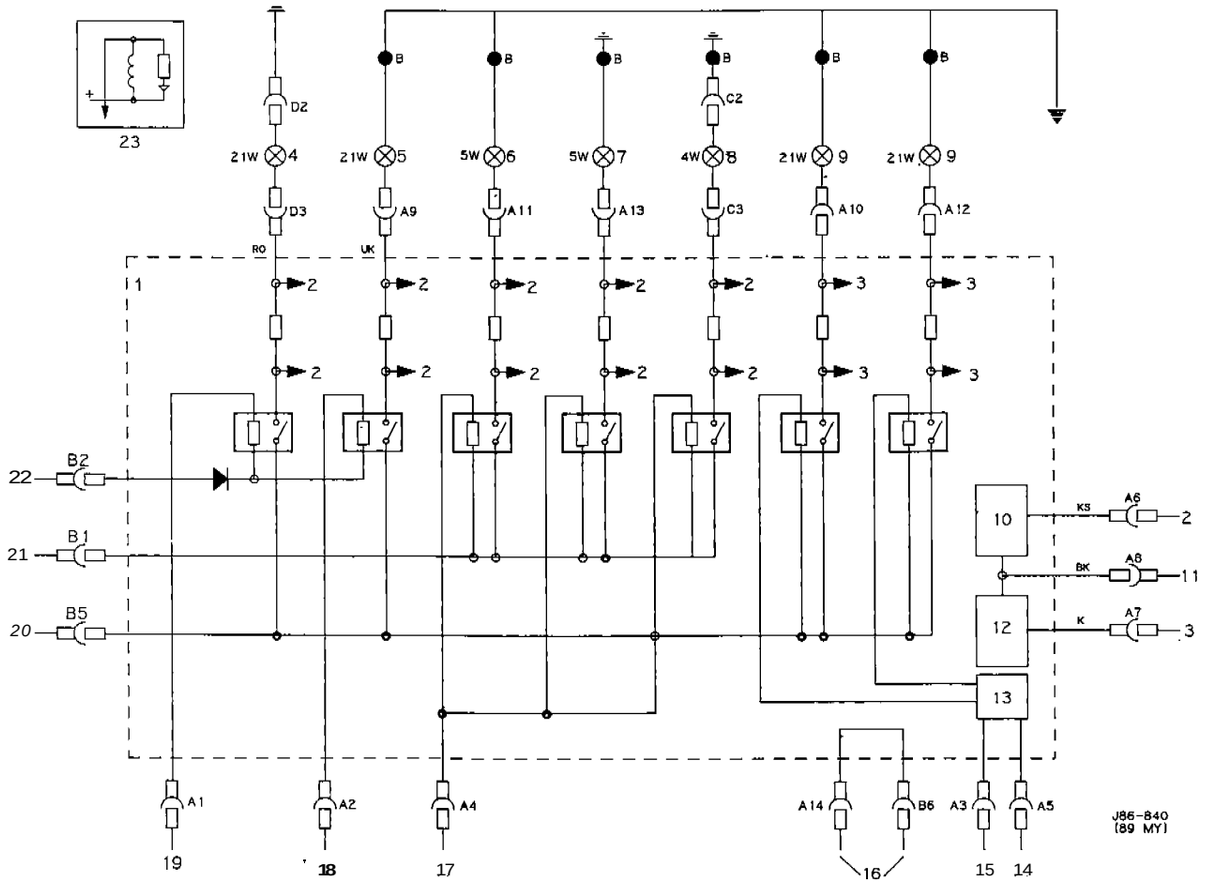
Fig 4

Fig 5

BULB FAIL MODULE – REAR

DIAGRAM **86.55.00**

Key to diagram
1 Module
2 General Fail
3 Direction Indicator Fail
4 Rear Fog Lamp
5 Reverse Lamp
6 Tail Lamp
7 Number Plate Lamp
8 Side Marker Lamp (USAAND CANADAONLY)
9 Stop/Direction Indicator Lamp
10 General Fail
11 Logic '0'
12 Direction Indicator Fail
13 Control Logic and Timer
14 Rear Direction Indicator
15 stop
16 Disconnect Earth Loop
17 Number Plate/Side Marker/Tail Lamp
18 Reverse Lamp
19 Rear Fog Lamp
20 Reverse/Stop/D.I./Fog +
21 Number Plate/Tail/Side Marker +
22 Ignition
23 Protection Network (Arrow goes to Switch)



RIGHT HAND SIDE FUSE BOX

Fuse No	Fuse Colour Code	Value	Circuit
A I	Grey	2 A	Ride levelling
A 2	Yellow	20 A	Right-hand air conditioning fan (where fitted) heater fan.
A 3	Yellow	20 A	Front and rear cigar lighters
A 4	Yellow	20 A	Spare position *
A 5	Light blue	15 A	Cooling fans and air conditioning clutch (where fitted)
A 6	Natural (White)	25 A	Headlamp power wash (where fitted).
A 7	Yellow	20 A	Heated rear screen
A 8	Red	10 A	Caravan/Trailer
B 1	Tan	5 A	Luggage compartment remote release
B 2	Light blue	15 A	Right-hand front door window lift and mirror motors if driver's door
B 3	Violet	3 A	Spare position *
64	Light blue	15 A	Doors, luggage compartment and fuel filler locks
B 5	Light blue	15 A	Right-hand rear door window lift
B 6	Tan	5 A	Windscreen washer
B 7	Red	10 A	Right-hand rear lamps (stop, reverse, direction indicators and fog ½where fitted]) and high mounted stop lamp (where fitted)
B 8	Light blue	15A	Right-hand main beam headlamp
C 1	Red	10 A	Radio
c 2	Brown	7.5 A	Interior, luggage compartment, under bonnet and door guard lamps
c 3	Violet	3 A	Right-hand rear lamps (tail, number plate and side marker ½where fitted]).
c 4	Violet	3 A	Instrument illumination dimmer and auxiliary side light relay.
c5	Tan	5 A	Right-hand front lamps (side, side marker [where fitted] direction indicators and repeater).
C 6	Violet	3 A	Aerial
c7	Red	10 A	Right-hand dip beam headlamp, right-hand front fog lamp (where fitted).
C8	Tan	5 A	Door mirror heaters.

LEFT HAND SIDE FUSE BOX

Fuse No	Fuse Colour Code	Value	Circuit
A 1	Light green	30 A	Left-hand front seat motors (where fitted) and seat heater (where fitted)
A 2	Yellow	20 A	Left-hand air conditioning fan (where fitted) / heater fan
A 3	Violet	3 A	Spare position *
A 4	Yellow	20 A	Spare position *
A 5	Red	10 A	Horns.
A 6	Natural (White)	25 A	Accessory fuse box (where fitted).
A 7	Red	10 A	Left-hand rear lamps (stop, reverse, indicators and fog [where fitted])
A 8	Violet	3 A	Spare position *
B 1	Light green	30 A	Right-hand front seat motors (where fitted) and seat heater (where fitted)
B 2	Light blue	15 A	Left-hand front door window lift and mirror motors if driver's door
B 3	Tan	5 A	Instrumentpack
B 4	Yellow	20 A	Sunroof
B 5	Light blue	15 A	Left-hand rear window lift and fuel filler flap interface
B 6	Tan	5 A	Left-hand front lamps (side, side marker [where fitted] direction indicators and repeater)
B 7	Light blue	15 A	Windscreen wiper
B 8	Light blue	15 A	Left-hand main beam headlamp
C 1	Violet	3 A	Spare position *
c 2	Grey	2 A	Diagnostic memory – automatic transmission (XJ6 4.0 litre)
c3	Red	10 A	Main fuse – automatic transmission (XJ6 4.0 litre).
c4	Violet	3 A	Spare position *
c5	Violet	3 A	Left-hand rear lamps (tail, number plate and side marker [where fitted]).
C6	Violet	3 A	Breather heater.
c 7	Red	10 A	Left-hand dip beam headlamp, left-hand front fog lamp (where fitted)
C 8	Violet	3 A	Spare position *

* NOTE: Although not used, positions marked * need to have fuses present to avoid a false fuse failure warning being displayed.

CENTRE FUSE BOX

Fuse No	Fuse Colour Code	Value	Circuit
1	Violet	**3 A**	Lamp modules right-hand rear and left-hand front and alternator control
2	Violet	3 A	Lamp modules right-hand front and left-hand rear and radio illumination
3	Tan	5 A	Speed control (where fitted)
4	Violet	3 A	Ride levelling (where fitted)
5	Violet	3 A	Cooling fan relay, heated windscreen washer jets and breather pipe heater relay
6	Tan	5 A	Instrument pack
7	Violet	3 A	Anti-lock braking system **(ABS)** main relay
8	Violet	3 A	Spare position *
9	Violet	**3 A**	Spare position *

* NOTE: Although not used, positions marked * need to have fuses present to avoid a false fuse failure warning being displayed.

IN-LINE FUSES

Protected Circuit	Location	Colour Code	Fuse Value
Wiper logic unit	Adjacent to wiper logic module below the glove compartment	Brown	7.5 A
Anti-lock braking system (ABS) ECU	Behind the front door pillar fuse box on the driver's side	Light green	**30 A**
Anti-lock braking system **(ABS)** pump motor	Behind the front door pillar fuse box on the driver's side	Light green	**30 A**
Radio where fitted)	Below centre console.	–	**10 A**
Radio memory	Below centre console.	–	**1 A**

91MY CHANGES

CONTENTS

DESCRIPTION	OPERATION	OPERATION No	PAGE No
BULB FAILURE MODULE FRONT - 91MY	DESCRIPTION	86.00.00	86-112
BULB FAILURE MODULE REAR - 91MY	DESCRIPTION	86.00.00	86-112
CENTRE CONSOLE PANEL - 91MY	DESCRIPTION	86.00.00	86-112
CIGAR LIGHTER	DESCRIPTION	86.00.00	86-107
DIMMER MODULE	DESCRIPTION	86.00.00	86-107
E-POST LAMPS - 91MY	DESCRIPTION	86.00.00	86-111
FUEL FILLER FLAP SOLENOID	DESCRIPTION	86.00.00	86-107
FUEL FILLER FLAP SOLENOID	RENEW	86.55.77	86-108
FUEL PUMP LINK HARNESS - 91MY	RENEW	86.70.20	86-110
FUEL SYSTEM RELAY - 91MY	DESCRIPTION	86.00.00	86-110
FUEL SYSTEM RELAY - 91MY	RENEW	18.30.30	86-110
GEAR SELECTION ILLUMINATION MODULE - 91MY	DESCRIPTION	86.00.00	86-112
IGNITION SWITCH	DESCRIPTION	86.00.00	86-111
IN CAR ENTERTAINMENT - 91MY	DESCRIPTION	86.00.00	86-113
LOAD DUMP MODULE - 91MY	DESCRIPTION	86.00.00	86-111
PASSIVE RESTRAINT - 91MY	DESCRIPTION	86.00.00	86-112
POWERED SEATS - 91MY	DESCRIPTION	86.00.00	86-111
RADIATOR COOLING FAN - 91MY	DESCRIPTION	86.00.00	86-111
SCREENWASH HEATER	DESCRIPTION	86.00.00	86-111
SIDELIGHTS ON POWER RELAY	DESCRIPTION	86.00.00	86-107

DIMMER MODULE

DESCRIPTION 86.50.00

A new split output dimmer has been introduced so that the interior lighting will go off, and the instrument pack remain illuminated if the ignition is switched off with the sidelights still switched on.

An audible warning sounds if the door is opened.

Switching off the sidelights extinguishes the instrument pack illumination and ends the audible warning.

When the ignition is off and the sidelights are switched on, the instrument pack illurnination can be dimmed using the manual dimmer knob, but the display cannot be completely extinguished.

There is an extra connector (SC7) on the 91MY dimmer module, SC7-2 (WN) is the auxiliary earth connection and SC7-1 (RO) is the output to the instrument pack bulb feed supply. There are also different pin numbers assigned to the steering column connector.

SIDELIGHTS ON POWER RELAY

DESCRIPTION 86.00.00

The 'Radio Illumination Relay' is replaced by the 'Sidelights On Power Relay', which also supplies the cigar lighter illumination.

CIGAR LIGHTER

DESCRIPTION 86.00.00

The cigar lighter receptacle/glow ring assembly has 3 Lucar type connectors which plug directly into the bulkhead harness.
The rear cigar lighter is connected into the circuit via a link lead.

The cigar lighter illumination is now supplied from the sidelights ON relay.

FUEL FILLER FLAP SOLENOID

DESCRIPTION 86.00.00

The fuel filler flap solenoid is operated from the central locking system and is electrically slaved to the left hand rear door lock.

In the event of failure of the electrical flap release, the flap can be opened by a mechanical override lever which is located behind the carpet trim in the left hand side of the boot.

FUEL FILLER FLAP SOLENOID

RENEW *86 55 77*

WARNING: OPERATIONS INVOLVING THE FUEL SYSTEM RESULT IN FUEL AND FUEL VAPOUR BEING PRESENT IN THE ATMOSPHERE.
FUEL VAPOUR IS HIGHLY FLAMMABLE, GREAT CARE MUST BE TAKEN WHEN WORKING ON THE FUEL SYSTEM.

THE FOLLOWING PRECAUTIONS MUST BE STRICTLY ADHERED TO:

1. NO SMOKING IN THE WORK AREA.
2. 'NO SMOKING' WARNING SIGNS MUST BE POSTED ROUND THE AREA.
3. A CO^2 FIRE EXTINGUISHER MUST **BE CLOSE** AT HAND.
4. DRY SAND MUST BE AVAILABLE TO SOAK UP ANY FUEL SPILLAGE.
5. EMPTY THE FUEL FROM THE TANK INTO AN AUTHORISED EXPLOSION PROOF CONTAINER USING SUITABLE FIREPROOF EQUIPMENT.
6. FUEL MUST NOT BE EMPTIED INTO A PIT.
7. THE WORK AREA MUST BE WELL VENTILATED.
8. THE BATTERY MUST BE DISCONNECTED BEFORE CARRYING OUT WORK ON THE FUEL SYSTEM.
9. THE OLD TANK MUST NOT BE **DISPOSED** OF UNTIL **IT** IS RENDERED SAFE FROM EXPLOSION.
10. MAINTENANCE PERSONNEL SHOULD HAVE UNDERTAKEN SPECIALIST TRAINING BEFORE BEING ALLOWED TO REPAIR COMPONENTS ASSOCIATED WITH THE FUEL SYSTEM.

Open the bonnet.
Disconnect the battery.
Open the boot.
Remove spare wheel and jack.
Remove the boot floor carpet, front liner, and **left** hand side liner.
Slacken and remove the fuel tank retaining strap to lower bracket clamping nuts and bolts (1 Fig 1).
Cut and remove the ratchet strap securing the filler housing solenoid block connector to the harness.
Disconnect the block connector (1 Fig 2).
Reposition the aperture seal to drain tube securing clip (2 Fig 2).
Disconnect the drain tube (3 Fig 2) from the aperture seal.
Open the fuel filler flap (1 Fig 3), and remove the filler cap (2 Fig 3).
Remove the aperture seal to filler neck garter spring (3 Fig 3).

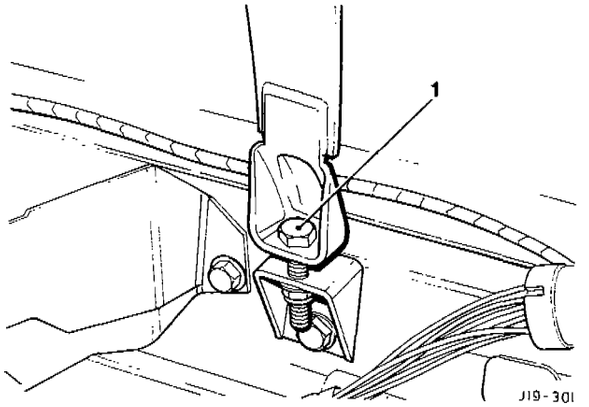


Fig 1

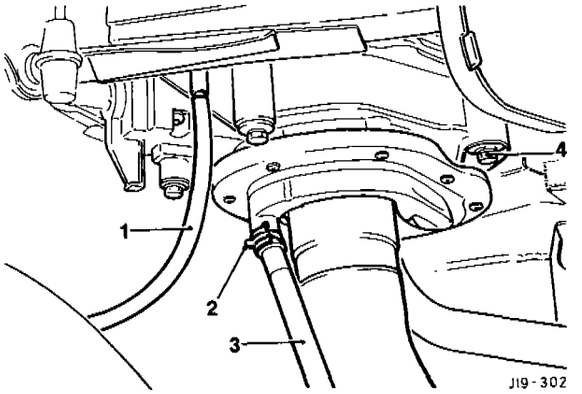


Fig 2

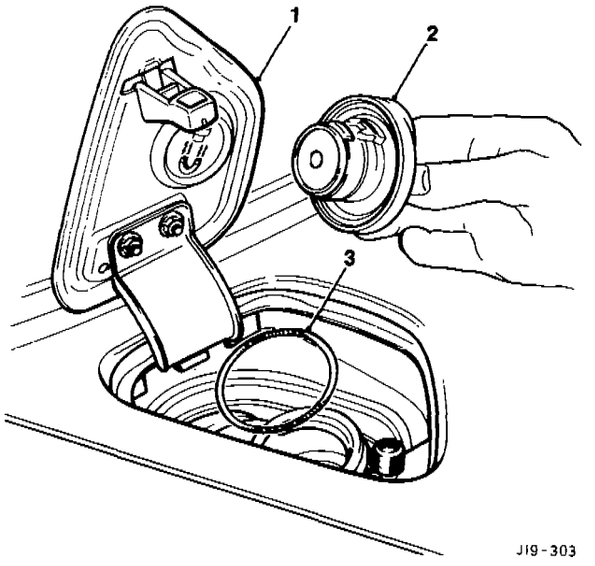


Fig 3

Undo and remove the filler housing to body securing bolts (4 Fig 1).
Displace the filler housing from the body filler flap aperture (remains captive on the filler neck).
Replace the aperture seal over the filler neck.
Reposition the fuel tank filler neck rearwards to assist removal of filler housing/solenoid assembly.
Move the filler housing front left hand corner upwards through the body aperture (Fig 2).
Reposition the fuel tank filler neck forwards.
Remove the filler housing assembly.

Note: The fuel filler flap solenoid is an integral part of the filler housing assembly, it cannot be replaced as a discrete item; the complete filler housing assembly must be replaced.

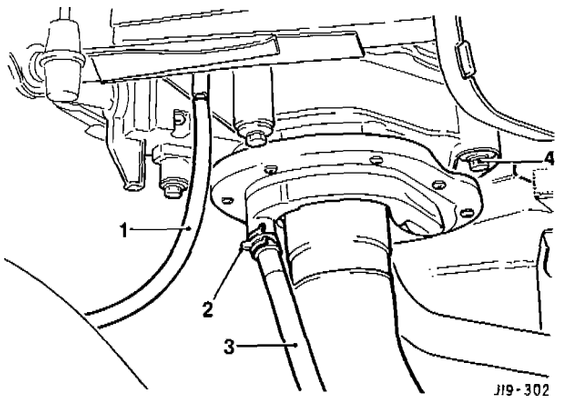


Fig 1

Remove and discard the filler housing gasket.
Clean the filler housing gasket faces.
Place the new filler aperture housing to front.
Remove the backing from the gasket,
Fit the new gasket to the filler housing flange.
From inside the boot, fit the filler housing to position the front left hand corner through the body aperture.
Reposition the fuel tank filler neck rearwards and fit the aperture seal over the filler neck.
Move the fuel tank filler neck and filler housing to align with the body aperture.
Fit and tighten the filler housing to the body securing bolts.
Fit and seat the aperture seal to the filler neck garter spring.
Connect the drain tube to the aperture seal (3 Fig 1).
Reposition and seat the drain tube to aperture seal securing clip (2 Fig 1).
Fit the fuel filler cap.
Connect the filler housing solenoid harness block connector.
Secure the block connector to the harness with a ratchet strap.

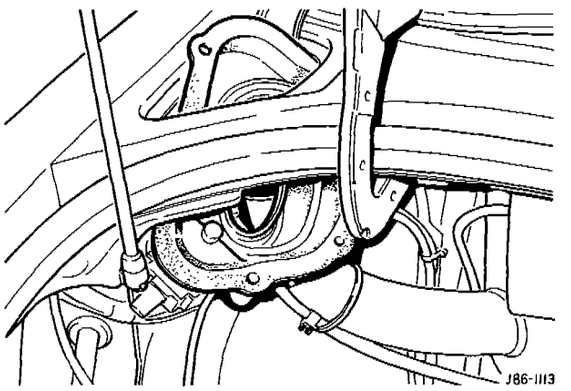


Fig 2

Reposition the fuel tank retaining strap lower brackets to the body bolt holes, then fit and tighten the body securing bolts.
Tighten the fuel tank retaining strap to the lower bracket clamping nuts and bolts, ensuring that no cables and pipes have been trapped.
Close the filler flap to check the alignment with the body.
Open the filler **flap.**
Remove the rubber stop from the adjustment screw.
Adjust the screw up or down as required.
Refit the rubber stop.
Close the filler flap.
Refit the boot front liner, left hand side liner and boot floor carpet.
Replace spare wheel and jack.
Close the boot.
Connect the battery.
Close the bonnet.

FUEL PUMP LINK HARNESS

RENEW *86.70.20*

Open the bonnet.
Disconnect the battery.
Open the boot.
Remove spare wheel and jack.
Remove the boot front liner and floor carpet.
Disconnect the fuel pump link harness to side harness block connector.
Cut and remove the ratchet straps securing the link harnesses.
Reposition the link harness from behind the fuel tank left hand retaining strap.
Disconnect and remove the link harness from the fuel tank evaporative loss flange socket (1 Fig 1).
Connect the new link harness to the fuel tank evaporative loss flange socket.
Reposition the link harness behind the fuel tank left hand retaining strap.
Connect the link harness to the **side** harness block connector.
Secure the fuel pump link harness with ratchet straps.
Refit the boot front liner and floor carpet.
Replace the spare wheel and jack.
Close the. boot.
Connect the battery.
Close the bonnet.

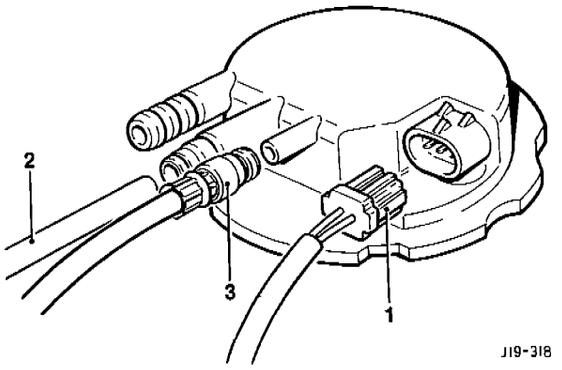


Fig 1

FUEL SYSTEM RELAY

DESCRIPTION **18.00.00**

The fuel pump relay has been re-positioned from under the passenger footwell to the underbonnet LHS forward of the bulkhead, and the colour of the relay base has changed from red to yellow.

FUEL SYSTEM RELAY

RENEW **18.30.30**

Open the bonnet and disconnect the battery.
The fuel pump relay is mounted adjacent to the brake pedal box.
Displace the relay cover and remove the relay from the yellow base connector.
Fit the new relay to the base connector and replace the relay cover.
Reconnect the battery and close the bonnet.

POWERED SEATS

DESCRIPTION *86.00.00*

The seat adjust relay used on 90MY vehicles is deleted at 91MY. Seat position control is now provided via the right and left seat relays which use earth switching instead of ignition positive and the earth switched 'door ajar' switch for control signals.

E POST LAMPS

DESCRIPTION **86.00.00**

E post lamps will only come on with the keyswitch in the auxiliary ignition position, and the 3 redundant wires that went to the passive ECU have been deleted.

SCREENWASH HEATER

DESCRIPTION ***86.00.00***

The screenwash heater element wires have been split *so* that the wire for the right hand heater element is fed from the right hand side and the left hand one from the left side, instead of feeding both from the right hand side.

LOAD DUMP MODULE

DESCRIPTION ***86.00.00***

The load dump module connector is changed to a PM5 type and is now earthed via pin 3 of this connector instead *of* direct to the body, also the fuses have been changed.

RADIATOR COOLING FAN MOTOR

DESCRIPTION **86.00.00**

Electrical connection to the radiator cooling fan motor is via a 2 way connector integral to the motor body, replacing the flying lead used at 90MY.

IGNITION SWITCH

DESCRIPTION **86.00.00**

The two 6 way PMHD column switchgear harness interface connectors **SC5** and ***SC6*** are replaced by **one** 6 way PMHD connector, SC8 in **order to** rationalise the number **of** connectors in the column switchgear area.

GEAR SELECTION ILLUMINATION MODULE

DESCRIPTION ***86.00.00***

The gear selector illumination module connector is changed from **a** 15 way PMHD to a MULTILOCK connector.

PASSIVE RESTRAINT

DESCRIPTION *86.00.00*

The following wires to the passive restraint ECU are deleted:-

Ignition ground	Connector LB86 Pin 5
Logic earth	Connector LB86 Pin 9
Logic earth	Connector LB86 Pin 12

These wires are spliced internally inside the ECU and are no longer needed.

CENTRE CONSOLE PANEL

DESCRIPTION 86.00.00

The centre console panel connector is changed from a 15 way PMHO to a 12 way Multilock connector. Although 13 wires are used, pins 12 and 15 on the previous connector go to the same PCB track on the clock.

BULB FAIL WARNING SYSTEM REAR
BULB FAIL WARNING SYSTEM FRONT

DESCRIPTION *86*.00.00

New bulb fail modules are completely interchangeable with the ones used at 90MY.

IN-CAR ENTERTAINMENT

DESCRIPTION

86.00.00

Changes are as follows:-

90 MY	91 MY
World Audio (Clarion) 3" door speakers 4" bass speakers Hirschmann aerial	AJ9100 Series (Alpine) 4" Co-axial speakers 5.25" bass speakers CD autochanger option Hirschmann aerial

Rewiring work will involve cutting and crimping to connect the 5.25' heelboard loudspeakers as purely bass speakers in parallel across each pair of door speakers for the standard four channel output.

All 91 MY cars will have a CD link lead taped to the left hand side harness; one end is fitted to the Head Unit and the other end is clipped behind the forward trim panel in the boot to be connected to the optional CD autochanger unit.

There is a new aerial lead taped to the right side harness.

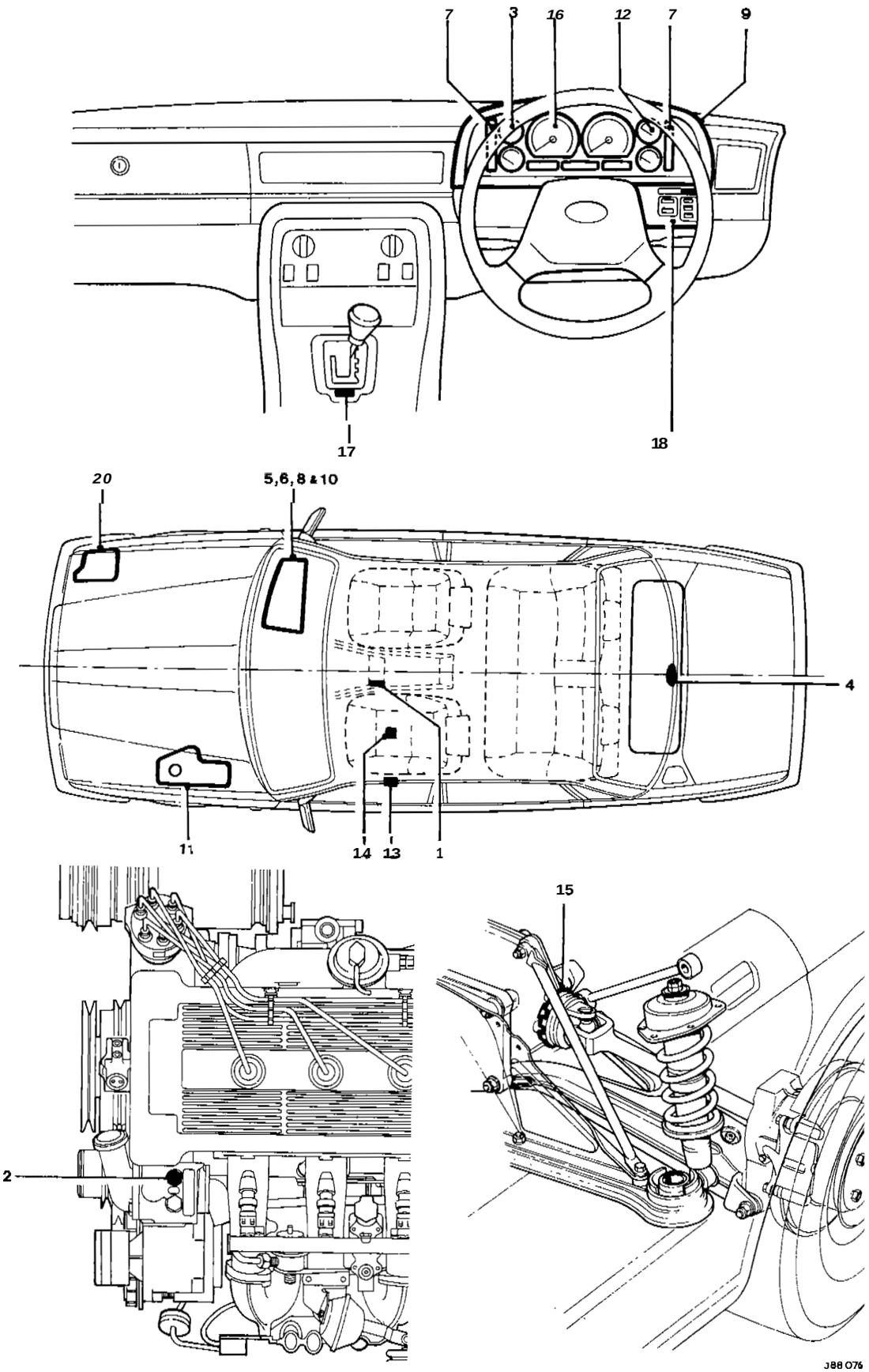
The unit is now earthed by the earth braid only, instead of the earth braid and connector 833 in pin 3.

A splice is now taken from Radio relay Aux +ve feed (pin 87) to the accessory fusebox for radio telephone use etc.

Battery +ve and Aux +ve feed in-line fuses are now replaced by thermal cut-out devices within the unit.

CONTENTS

DESCRIPTION	OPERATION	OPERATION No	PAGE No
AUTOMATIC TRANSMISSION UNIT LINEAR SWITCH	RENEW	44.15.12	88-24
BULBS	INTRODUCTION	88.00.00	88-06
COOLANT TEMPERATURE TRANSMITTER	RENEW	88.25.20	88-22
FUEL/BATTERY CONDITION GAUGE SET	RENEW	88.25.33	88-18
FUEL GAUGE UNIT	REVISIONS	88.00.00	88-27
FUEL GAUGE TANK UNIT	RENEW	88.25.32	88-23
INDEX	ILLUSTRATED	88.00.00	88-02
INSTRUMENT ELECTRONICS PACK	RENEW	88.20.22	88-13
INSTRUMENT GAUGES	INTRODUCTION	88.00.00	88-06
INSTRUMENT PACK CONNECTORS	PIN LOCATION	88.00.00	88-05
INSTRUMENT PACK ILLUMINATION BULBS	RENEW	86.45.49	88-21
INSTRUMENT PACK LCD MODULE	RENEW	88.20.23	88-20
INSTRUMENT PACK LENS/COWL	RENEW	88.20.17	88-12
INSTRUMENT PACK PRINTED CIRCUIT	RENEW	88.20.20	88-10
INSTRUMENTS	INTRODUCTION	88.00.00	88-04
LOW COOLANT LEVEL PROBE	RENEW	26.40.11	88-22
ODOMETER DISPLAY	INTRODUCTION	88.00.00	88-06
OIL PRESSURE/COOLANT TEMPERATURE GAUGE SET	RENEW	88.25.09	88-16
SEAT BELT BUCKLE SWITCH	RENEW	86 57.25	88-25
SEAT PAD SWITCH	RENEW	86.57.21	88-24
SPEED SENSOR	RENEW	88.30.03	88-22
SPEEDOMETER/TACHOMETER GAUGE SET	RENEW	88.30.20	88-14
SPORT MODE SWITCH	RENEW	86.65.84	88-26
VEHICLE CONDITION MONITOR	INTRODUCTION	88.00.00	88-08
VEHICLE CONDITION MONITOR	FAULT CODES	88.00.00	88-08
WARNING LIGHTS	REVISIONS	88.00.00	88-27
WASHER RESERVOIR SENSOR	RENEW	84.10.17	88-26


7
3
16
12
7
9
17
18
20
5,6,8 & 10
4
11
14
13
1
15
2
J88 076

ILLUSTRATED INDEX–KEY

ITEM No	DESCRIPTION	OPERATION No	PAGE No	VOLUME
1	AUTOMATIC TRANSMISSION UNIT LINEAR SWITCH	44.15.12	88-24	4
2	COOLANT TEMPERATURE TRANSMITTER	88.25.20	88-22	4
3	FUEL/BATTERY CONDITION GAUGE SET	88.25.33	88-18	4
4	FUEL GAUGE TANK UNIT	88.25.32	88-23	4
5	INSTRUMENT PACK	88.20.22	88-13	4
6	INSTRUMENT PACK CONNECTORS	88.00.00	88-05	4
7	INSTRUMENT PACK ILLUMINATION BULBS	86.45.49	88-21	4
8	INSTRUMENT PACK LCD MODULE	88.20.23	88-20	4
9	INSTRUMENT PACK LENS/COWL	88.20.17	88-12	4
10	INSTRUMENT PACK FLEXIBLE PRINTED CIRCUIT	88.20.20	88-10	4
11	LOW COOLANT LEVEL PROBE	26.40.11	88-22	4
12	OIL PRESSURE/COOLANT TEMPERATURE GAUGE SET	88.25.09	88-16	4
13	SEAT BELT BUCKLE SWITCH	86.57.25	88-25	4
14	SEAT PAD SWITCH	86.57.21	88-24	4
15	SPEED SENSOR	88.30.03	88-22	4
16	SPEEDOMETER/TACHOMETER GAUGE SET	88.30.20	88-14	4
17	SPORT MODE SWITCH	86.65.84	88-26	4
18	TRIP COMPUTER	88.00.00	88-08	4
19	VEHICLE CONDITION MONITOR KEYPAD	88.00.00	88-08	4
20	WASHER RESERVOIR SENSOR	84.10.17	88-26	4

INTRODUCTION 88.00.00

The Instrument Pack is a self-contained removeable unit that incorporates all the main display gauges and warning indicators that are used to present vehicle condition information. The primary function of the Instrument Display is to provide the driver with information usual to normal driving requirements. The secondary function is to display the results of trip computer calculations and information, in response to signals received from the trip computer keypad.

Information is received from sensors positioned at various locations about the vehicle via one of the two multi-pin sockets located at the rear of the Instrument Pack (Fig.1, Page 88-05).

Information concerning vehicle condition and operation is displayed in one of three ways:

1 Information necessary to confirm normal vehicle operation:
   road speed,
   engine speed,
   oil pressure,
   battery condition,
   fuel level,
   coolant temperature.
   This information is displayed using analogue gauges as shown in Fig. 1, Page 88-07.

2 Information indicating the presence of a hazard/fault condition (low oil pressure/door open etc.) or operational action (indicator flashing/headlamp full beam ON etc.). This information is provided by twenty two warning lamps/tell-tales, arranged in four groups, two groups of seven at the left and right sides of the instrument panel and two groups of four at the bottom of the instrument panel (Fig. 3, Page 88-07).

3 An LCD Display is located at the bottom-centre of the instrument pack and is normally used *to* display the odometer reading, but it can also be used to display vehicle condition messages associated with particular warning lamps and trip computer information such as vehicle speed, fuel usage and distance travelled.

INSTRUMENT PACK CONNECTORS

PIN LOCATIONS 88.00.00

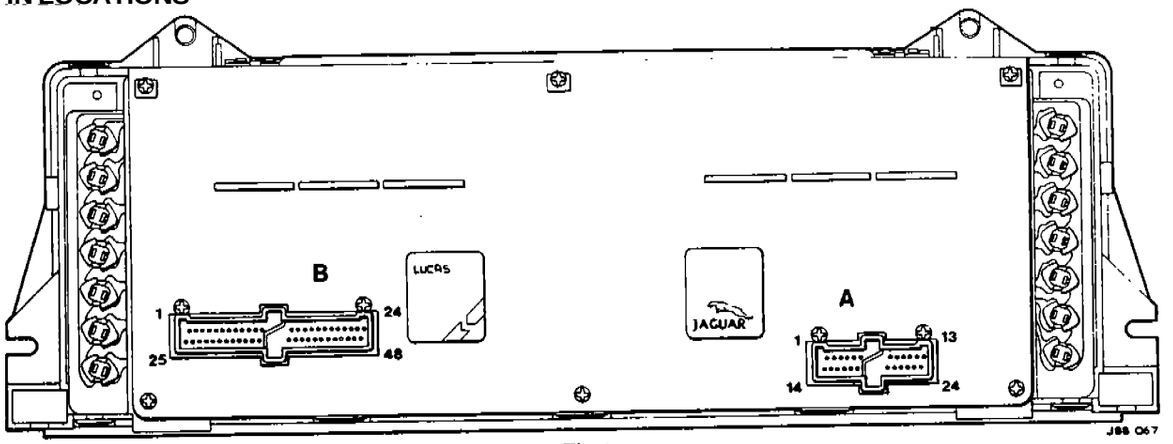


Fig 1

SOCKET A

Pin	Circuit Input
1	Fuel **Flow**
2	12v ignition feed
3	Ground
4	Ground
5	Battery feed
6	Spare
7	
8	-
9	
10	Illumination (bulb feed)
11	
12	-

Pin	Circuit Input
13	Serial output (1)
14	Serial input (2)
15	Speed sensor input
16	Speed sensor input (0v)
17	Speed sensor screen
18	Charge warning
19	Coolant temperature
20	Fuel level
21	Oil pressure
22	
23	
24	Tachometer input (-ve)

SOCKET B

Pin	Circuit Input
1	
2	Speed out
3	
4	
5	
6	
7	Brake pad feed
8	Fuse (4)
9	Low brake pressure
10	Brake fluid level
11	Brake lights
12	Fuse (3)
13	Wash fluid level
14	Sport mode
15	Seat belt
16	Boot open
17	Park brake (on)
18	D.I. bulb fail
19	Elec supply fail (controller)
20	Door open (LH rear)
21	Door open (RH rear)
22	Check engine (fuel fault)
23	Catalyst warning
24	Main beam

Pin	Circuit Input
25	Average speed
26	Average fuel
27	Fuel
28	Range
29	Clear
30	VCM
31	Inst. fuel
32	Distance
33	Ground keyboard
34	Brake pad sense
35	Fuse (1)
36	Fuse (2)
37	Coolant level
38	Side light (on)
39	Caravan (on)
40	Left D.I. (on)
41	Right D.I. (on)
42	Imp/Metric slide switch
43	General bulb fail
44	Gearbox fail
45	Elec supply fail (brakes)
46	Door **open** (LH front)
47	Door open (RH front)
48	Anti-lock fail

GAUGES

There are six analogue-style gauges contained in the instrument pack :

1 Speedometer.
2 Tachometer.
3 Battery condition.
4 Fuel Level.
5 Oil Pressure.
6 Coolant Temperature.

The speedometer and tachometer are true analogue gauges, in that the readings indicated are directly proportional to the parameters being measured. However, the four minor gauges (battery condition, fuel level, oil pressure and coolant temperature) each have their indication ranges resolved into 58 discrete steps. Slight gauge flicker may be discernable between individual steps.

Each gauge is contained in a sealed non-serviceable can, therefore complete replacement of the gauge/can is necessary in the event of a damaged or faulty gauge.

Extreme care should be exercised when replacing instrument pack components, to avoid damage to the delicate gauge indicator needles.

The coolant temperature gauge needle will move rapidly up the scale to 'N' when the thermostat opens. This is due to the sensitivity of the gauge and the close proximity of the sensor to the thermostat, ie when the thermostat opens, a rush of hot coolant from the cylinder block causes the sensor to react accordingly. It is perfectly normal, there is not a fault with the gauge.

BULBS

Guage and warning indicator illumination is controlled by a microprocessor located in the electronic instrument pack, there are no bulb relays. Bulbs are of the long life type. There are two different types of coloured bulb holder, cream and brown, the two types should not be interchanged and replacement bulbs should be of the same colour type.

The seven right-hand warning indicators are for primary warnings and illuminate RED. The seven left hand warning indicators are for secondary warnings and illuminate AMBER. The eight lower lamps are a mixture of status and warning lamps.

ODOMETER

Total distance travelled by the vehicle is displayed on an LCD display located centre-bottom of the Instrument Pack. The LCD is a single line, six digit, seven segment display.

The odometer shares the LCD display with Trip Computer and Vehicle Condition Monitor information. When the ignition is switched off, the odometer reading is permanently displayed. If the ignition is switched on and the odometer reading is not shown, it can be displayed by pressing the 'CLEAR' button located on the VCM keypad (Fig.2 Page 88-07) either once or twice.

Excessive heat in the vicinity of the LCD display will be automatically detected by a thermistor, and the backlight will be dimmed to prevent opaqueing of the LCD. This safety feature may be actioned if driving in hot countries with headlights on full beam for example.

instrument Pack Displays and Keypad

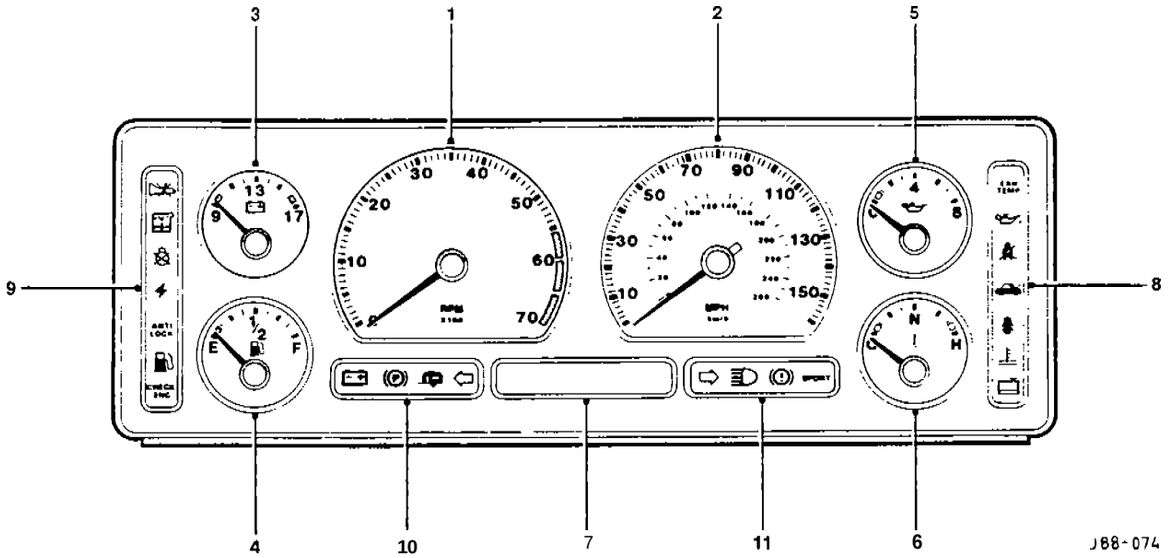


Fig 1

GAUGES (Fig 1 & 2)

1 Tachometer
2 Speedometer
3 Battery Condition
4 Fuel Gauge
5 Oil Pressure
6 Coolant Temperature
7 Odometer/VCM/Trip Computer Display
8 Primary Warning Indicators (RED)
9 Secondary Warning indicators (AMBER)
10 Status Warning Lights
11 Status Warning Lights
12 VCM/Trip Computer Keypad

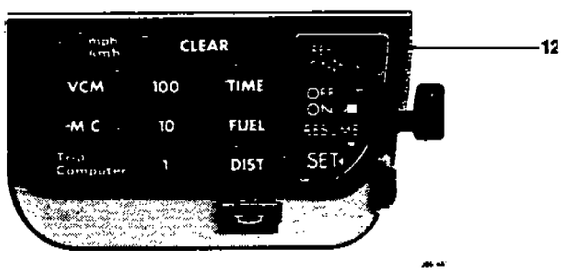


Fig 2

WARNING INDICATORS (Fig 3)

1 Automatic Transmission Failure
2 Low Windscreen Washer Reservoir Level
3 Bulb Failure
4 Circuit Failure
5 Anti-lock Braking System Failure
6 Low Fuel Level
7 Engine Management Fault
8 Ignition Light & Battery Alternator Fault
9 Handbrake ON
10 Caravan Indicator Fault
11 Direction Indicator
12 Direction Indicator
13 Headlamp Main Beam ON
14 Brake System Fault
15 Sport Mode
16 Low Coolant Level
17 High Coolant Temperature
18 Door Open
19 Boot Open
20 Seat Belt Not Fastened
21 Low Oil Pressure
22 Exhaust Temperature

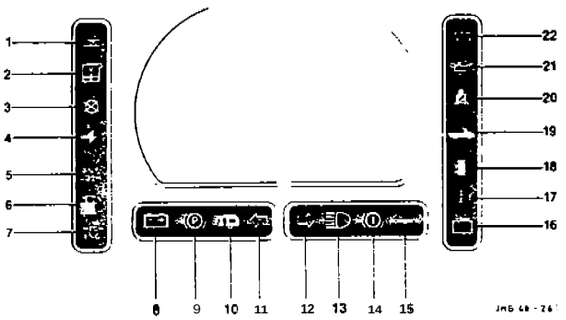


Fig 3

VEHICLE CONDITION MONITOR (VCM)

INTRODUCTION *88.00.00*

The Vehicle Condition Monitor information is displayed on the Odometer/VCM/Trip Computer display panel located below the tachometer and speedometer.

The condition of the vehicle is constantly monitored for operating faults which, if found, are highlighted by the illumination of certain warning lights. By pressing the VCM button located on the trip computer panel the relevant fault message will be displayed (Fig.1 & 2 Page **88-07**).
In the event that more than one fault has occurred, the display panel will cycle between messages, pausing for two seconds at each one.

To enable the trip computer information to be displayed, the button marked 'CLEAR' provides a means of extinguishing any VCM message present on the written display.
Pressing the VCM button when a fault exists will override any trip computer messages and re-display the relevant **VCM** fault symbol.

VEHICLE CONDITION MONITOR

FAULT CODES (CHECK ENGINE) 88.00.00

In the event of an engine management fault occurring the 'Check Engine' warning light will be illuminated. Additional information can be displayed by pressing the Vehicle Condition Monitor (VCM) button located on the trip computer panel.

When a fault has been signalled the likely area responsible for the malfunction can be indicated when the vehicle is stationary.
Switch off the ignition, wait at least 5 seconds, then turn the ignition switch to position 'II' (do not start the engine). Press the VCM button, this action will cause the VCM/trip computer display to illuminate the applicable fault code.

All fault codes are, when triggered, stored in the ECU memory. In addition, the 'check engine' lamp is illuminated. and will remain illuminated (when the ignition is switched on) until the fault is rectified and the ECU memory cleared by JDS or by grounding the relevent ECU pin (*see* notes for exceptions).

NOTES:

1 USA Specification: Fault codes 26 and 44 will not remain illuminated at each ignition on/off cycle. This is to prevent the check engine lamp becoming a nuisance if the vehicle runs out of fuel. Codes 26 and 44 will remain on only until the next ignition on/off cycle.
If the VCM function is used (while the lamp is illuminated), the code will be displayed. After the next ignition on/off cycle, the code will no longer be available to the driver. However, the code is still in the ECU memory and can be accessed by dealer personnel.

2 Non USA Catalyst Specification: Only the following fault codes will cause the check engine lamp to illuminate – 11, 12, 14, 16, 17, 18, 19, 68, 23, 26 and 44. The lamp will not remain illuminated after the next ignition on/off cycle.

3 Non Catalyst Specification: As Non USA Catalyst Specification except that codes 23, 26 and 44 are not active.

CHECK ENGINE FAULT CODES

FAULT CODE	DESCRIPTION	IMPLICATION
11	Idle pot or associated wiring	Suspect idle trim pot out of normal operating range
12	Air flow meter or associated wiring	Suspect air flow meter signal out of normal operating range
14	Coolant thermistor or associated wiring	Suspect coolant thermistor resistance out of range or static during engine warm up
16	Air thermistor or associated wiring	Suspect air thermistor resistance out of range
17	Throttle pot or associated wiring	Suspect throttle pot resistance out of range
18	Throttle pot/air flow meter calibration	Suspect low throttle pot signal at high air flow
19	Throttle pot/airflow meter calibration	Suspect high throttle pot signal at low airflow
22	Fuel pump drive	Suspect ECU output signal to fuel pump relay
23	Fuel supply	Suspect poor feedback control in rich direction
24	Ignition drive	Suspect ECU output signal to ignition amplifier module
26	Air leak	Suspect poor feedback control in lean direction
29	ECU self check	Checks microprocessor function
33	Injector drive fault	Checks for ECU output to injectors
34	Injector drive and associated wiring	Looks for injector dribble
37	EGR drive	Looks for ECU output to EGR switch valve
39	EGR check sensor	Checks correct operation of EGR
44	Lambda sensor or associated wiring	Looks for feedback out of control rich or weak
46	Idle speed control coil 1 drive	Looks for ECU output to idle speed control stepper motor
47	Idle speed control coil 2 drive	Looks for ECU output to idle speed control stepper motor
48	Idle speed control motor or valve	Looks for stepper motor being wildly out of position with engine temperature hot and less than 86°F (30°C)
68	Road speed sensor or associated wiring	Looks for road speed indicating less than 5 km/h at high engine air flow
69	Drive/neutral switch or wiring	Looks for cranking in 'D' or high air flow in 'N'
89	Purge valve drive	Looks for ECU output to purge valve

INSTRUMENT PACK FLEXIBLE PRINTED CIRCUIT

RENEW **88.20.20**

Disconnect the battery.
Remove driver's side dash liner securing screws, release securing clip, and remove liner.
Release steering column clamp, fully extend steering wheel, and re-tighten clamp.
Remove instrument pack assembly securing screws.
Disconnect block connectors from rear of pack.
Displace and remove instrument pack assembly.
Remove instrument pack cowl-housing screws, and remove cowl-housing.
Place pack face down on bench, ensuring cowl/lens is protected with a suitable cloth or similar.

NOTE: To minimise risk of damage and contamination, all repairs conducted on the Instrument Pack should be performed in a non-static dust-free environment.

Remove the electronics pack cover securing screws, and remove the cover.
Carefully release the flexible printed circuit ribbon-ends from the edge-connectors, by squeezeing grips between thumb and forefinger while sliding out connector-latch (Fig.1).
Release the electronics pack retaining clips (Fig 2) and pivot the pack upwards.
Displace and remove the electronics pack from the instrument pack by lifting off from hinges.
Displace and remove all warning bulbs (bayonet fitting, twist 1/8th turn anti-clockwise to release– fig 3).

NOTE: There are two different types of coloured bulb holders, each type must be returned to the correct location.

Disconnect the flexible printed circuit to LCD multi-plug (Fig 4). DO NOT remove plug from the outer case of the Instrument Pack.
Remove the 7 veneer panel securing screws (Fig 1 Page 88-11), carefully peeling back top corners of the flexible printed circuit to gain access to 2 of the veneer panel securing screws.
With the gauges uppermost, release the cowl/lens securing clips and remove the cowl/lens assembly.

CAUTION: With the cowl/lens removed, DO NOT rest the pack face down. The gauge needles are extremely delicate and are easily damaged.
Also, take care not to scratch or damage the gauge faces, ensure cleanliness when handling the pack.

Displace and remove the veneer panel. The LCD module is attached to the veneer panel, and with caution may be removed as a complete, assembly. CAREFULLY, remove oil/water temperature gauge set, gently easing the pins out of the printed circuit crimps (Fig 2 Page 88-11). To prevent widening crimp connections, gauge pairs should be kept square to the Instrument Pack moulding whilst removing.

Repeat for the battery/fuel gauge set.
Repeat for the speedometer/tachometer gauge set.

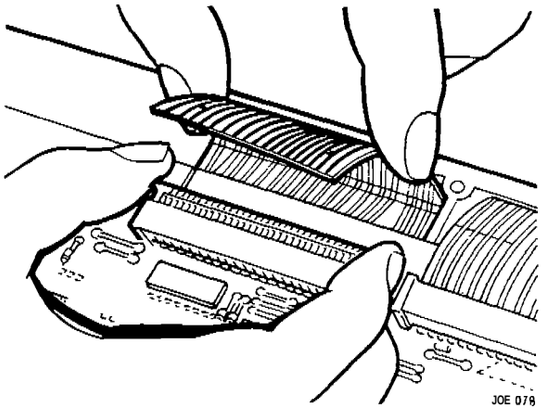


Fig 1

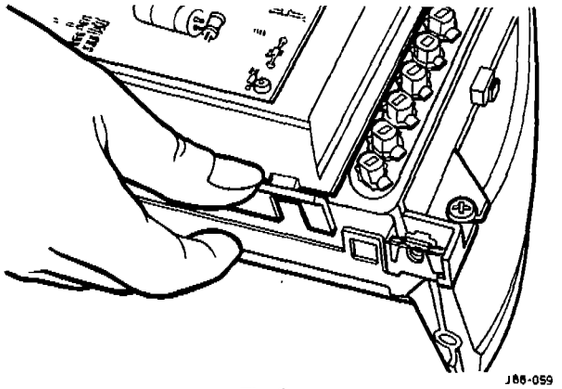


Fig 2

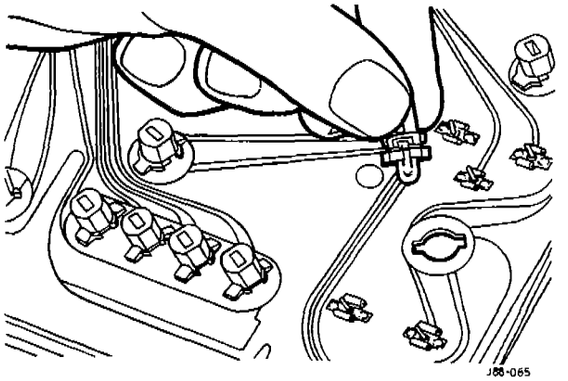


Fig 3

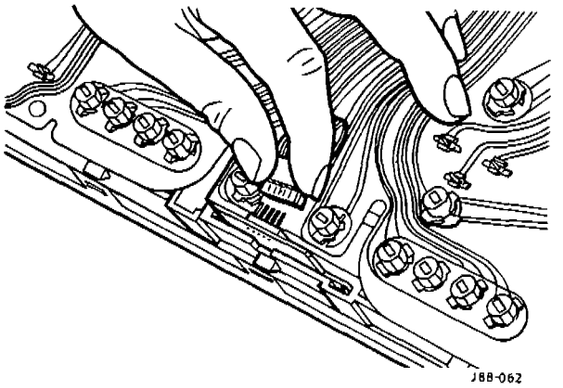


Fig 4

Displace and remove the flexible printed circuit.

NOTE: Individual gauge movements CAN NOT be serviced, pointers and can location screws should not be removed. Gauges should not be placed face down.

Align new flexible printed circuit to instrument pack. Align and fit speedometer/tachometer gauge set to instrument pack. Take care not to damage gauge needles.
Ensure gauge set is inserted square to pack and flexible printed circuit and **CAREFULLY** push the gauge pins through the printed circuit. DO NOT press down on the crimps, distortion may occur. Press down on the flat tangs (set at right angles to the crimps) ***as*** shown in Fig 3

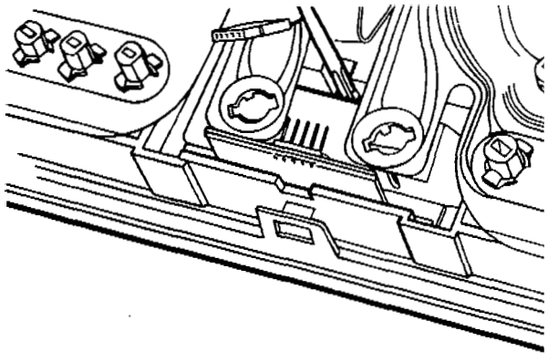


Fig **1**

NOTE: Take care not to damage crimps or flexible printed circuit. If damage occurs or problems arise due to loose crimp connections, renew the flexible printed circuit.

Repeat for the battery/fuel gauge set.
Repeat for the oil/water temperature gauge set.

Before fitting veneer panel, carefully return all gauge needles to "STOP PIN" position.
Align and fit veneer panel/LCD module assembly. Fit and tighten centre securing screw.
Fit the cowl/lens assembly.
Fit and tighten the six remaining veneer panel securing screws.
Fit and fully seat warning bulbs, ensuring correct colour type is inserted at correct location (the ***8*** white bulb/ holders are for gauge illumination, the remaining 24 are forwarning indication only).
Connect the flexible printed circuit multi-plug to the LCD unit.
Carefully fit electronics pack over the flexible printed circuit connections and locate into hinges.
Pivot pack downwards and fit into securing clips.
Fit the flexible printed circuit to the edge-connectors, by positioning holes in flexible printed circuit membrane over the connector-latch locating pips and sliding latch to the fully closed position.
Align and fit the back cover to the electronics pack. Fit and tighten the securing screws.
Fit the cowl-housing to the pack. Fit and tighten the cowl-housing securing screws.

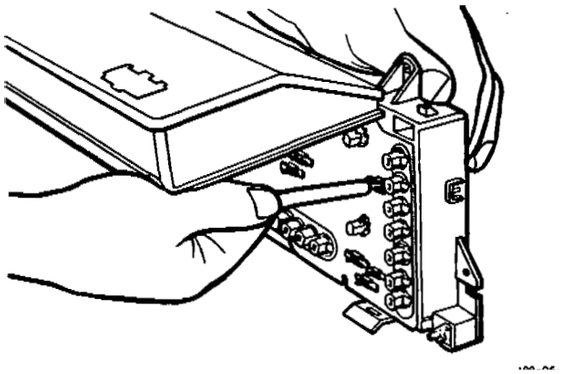
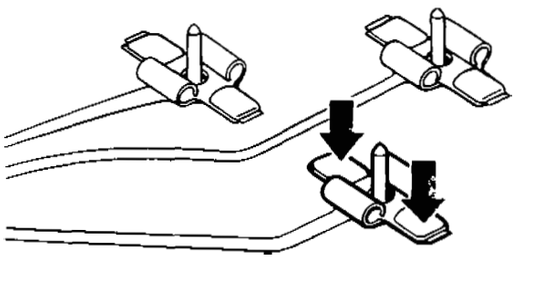


Fig 2

Fit instrument pack assembly into dashboard position, re-connect the block connectors.
Align assembly, fit and tighten the securing screws.
Return steering wheel to original position.
Refit the dash liner.
Reconnect the **battery.**

NOTE: On re-connection of the battery, it is important that the ignition is cycled and the bulb check is completed. The odometer reading will then be restored to the correct value.



J88-06

Fig **3**

INSTRUMENT PACK LENS/COWL

RENEW **88.20.17**

Disconnect the battery.
Remove driver's side dash liner securing screws, release the securing clip, and remove the liner.
Release the steering column clamp, fully extend the steering wheel, and re-tighten the clamp.

Remove the instrument pack assembly securing screws.
Disconnect block connectors from rear of pack.
Displace and remove the instrument pack assembly (Fig 1).

Release the cowl/lens securing clips and remove the cowl/lens assembly (1 Fig 2),

CAUTION: With the cowl/lens removed, DO NOT rest the pack face down. The gauge needles are extremely delicate and are easily damaged.
Also, take care not to scratch or damage the gauge faces, ensure cleanliness when handling the pack.

Fit the new cowl/lens assembly to the instrument pack.
Fit the instrument pack assembly into dashboard position, re-connect the block connectors.
Align the assembly, fit and tighten the securing screws.
Return the steering wheel to its original position. Refit the dash liner.
Reconnect the battery.

NOTE: On re-connection of the battery, it is important that the ignition is cycled and the bulb check is completed. The odometer reading will then be restored to the correct value.

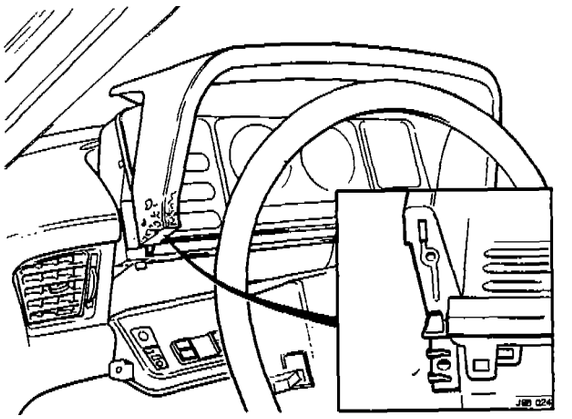


Fig 1

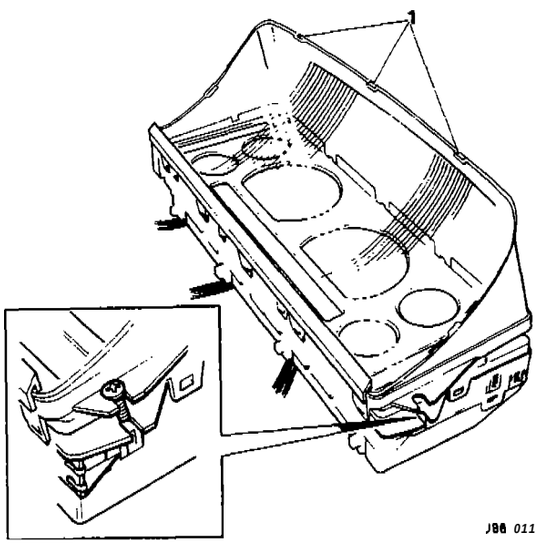


Fig 2

INSTRUMENT ELECTRONICS PACK

RENEW **88.20.22**

Disconnect the battery.
Remove driver's side dash liner securing screws, release the securing clip, and remove the liner.
Release the steering column clamp, fully extend the steering wheel, and re-tighten the clamp.
Remove the instrument pack assembly securing screws.
Disconnect block connectors from rear of pack.
Displace and remove the instrument pack assembly.

Remove the instrument pack cowl-housing screws, and remove the cowl-housing.
Place the pack face down on the bench, ensuring that the case/lens is protected with a suitable cloth or similar.

NOTE: To minimise the risk of damage and contamination, all repairs conducted on the Instrument Pack should be performed in a non-static dust-free environment.

Remove the electronics pack cover securing screws, and remove the cover.
Carefully release the flexible printed circuit ribbon-ends from the edge-connectors, by squeezeing grips between thumb and forefinger while sliding out connector latch (Fig.1).
Release the electronics pack retaining clips (Fig 2) and pivot the pack upwards.
Displace and remove the electronics pack from the instrument pack by lifting off from hinges.

Carefully fit the new electronics pack over the printed circuit connections and locate into the hinges.
Pivot the pack downwards and fit into the securing clips.
Fit the flexible printed circuit to the edge-connectors, by positioning holes in flexible printed circuit membrane over the connector-latch locating pips and sliding latch to the fully closed position.
Align and fit the back cover to the electronics pack. Fit and tighten the securing screws.
Fit the cowl-housing to the pack. Fit and tighten the cowl-housing securing screws.

Fit the instrument pack assembly into dashboard position, re-connect the block connectors.
Align the assembly, fit and tighten the securing screws.
Return the steering wheel to its original position. Refit the dash liner.
Reconnect the battery.

NOTE: On re-connection of the battery, it is important that the ignition is cycled and the bulb check is completed. The odometer reading will then be restored to the correct value.

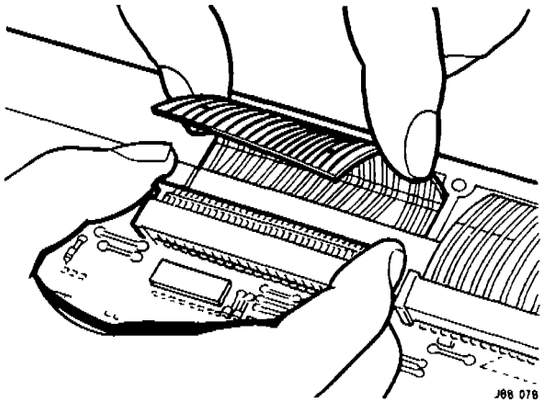


Fig 1

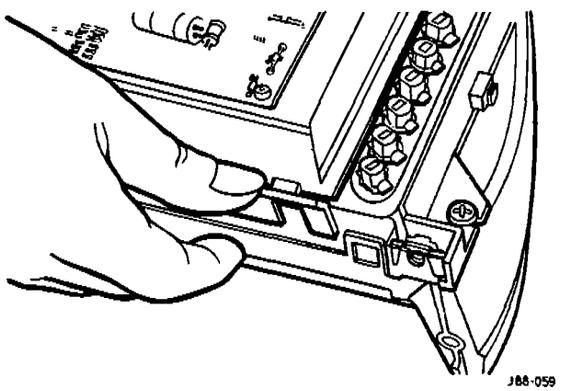


Fig 2

SPEEDOMETER/TACHOMETER GAUGE SET

RENEW **88.30.20**

Disconnect the battery.
Remove driver's side dash liner securing screws, release securing clip, and remove liner.
Release steering column clamp, fully extend steering wheel, and re-tighten the clamp.
Remove instrument pack assembly securing screws.
Disconnect block connectors from rear of pack.
Displace and remove instrument pack assembly.
Remove instrument pack cowl-housing screws, and remove cowl-housing.
Place pack face down on bench, ensuring cowl/lens is protected with suitable cloth or similar.

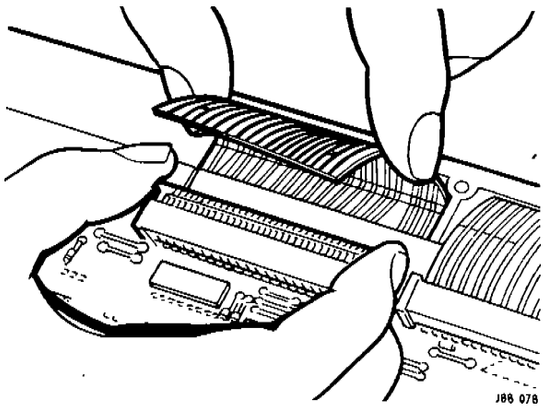


Fig 1

NOTE: To minimise the risk of damage and contamination, all repairs conducted on the Instrument Pack should be performed in a non-static dust-free environment.

Remove the electronics pack cover securing screws, and remove the cover.
Carefully release the flexible printed circuit ribbon-ends from the edge-connectors, by squeezeing grips between thumb and forefinger while sliding out connector latch (Fig.1).
Release electronics pack retaining clips (Fig 2) and pivot pack upwards.
Displace and remove electronics pack from the instrument pack by lifting off from hinges.
Displace and remove all warning bulbs (bayonet fitting, twist 1/8th turn anti-clockwise to release).

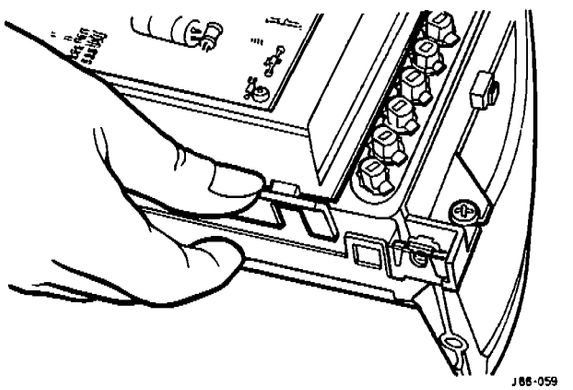


Fig 2

NOTE: There are **two** types of coloured bulb holders, each type must be returned to the correct location.

Disconnect the flexible printed circuit to LCD multi-plug (Fig 3). DO NOT remove plug from the outer case of the Instrument Pack.
Remove the 7 veneer panel securing screws, carefully peeling back top corners of the flexible printed circuit to gain access to 2 of the veneer panel securing screws.
With the gauges uppermost, release the cowl/lens securing clips and remove the cowl/lens assembly.

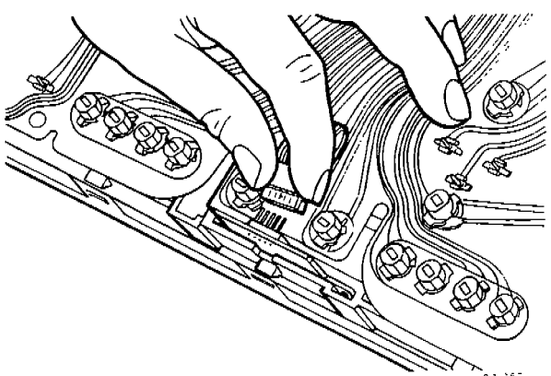


Fig 3

CAUTION: With cowl/lens removed, DO **NOT** rest pack face-down. The gauge needles are extremely delicate and are easily damaged. Also, take care not to scratch or damage the gauge faces, ensure cleanliness when handling the pack.

Displace and remove the veneer panel. The LCD module is attached to the veneer panel, but with caution may be removed as a complete, assembly.

CAREFULLY, remove speedometer/tachometer gauge set, gently easing the pins out of the printed circuit crimps (Fig 1 Page 88-15). To prevent widening crimp connections, gauge pairs should be kept square to the Instrument Pack moulding whilst removing.

NOTE: Individual gauge movements CAN NOT be serviced, pointers and can location screws should not be removed.

Align and fit new speedometer/tachometer gauge set to the instrument pack (Fig 2). Take care not to damage the gauge needles.
CAREFULLY push the gauge pins through the flexible printed circuit. DO NOT press down on the crimps, distortion may occur. Press down on the flat tangs (set at right angles to the crimps) as shown in **Fig** 3.

NOTE: Take care not to damage crimps or flexible printed circuit. If damage occurs or problems arise due to **loose** crimp connections, renew the flexible printed circuit.

Before fitting veneer panel, carefully return all gauge needles to "STOP PIN" position.
Align and fit veneer panel and LCD module assembly. Fit and tighten centre securing screw.
Fit the cowl/lens assembly.
Fit and tighten the six remaining veneer panel securing screws.
Fit and fully seat the warning bulbs, ensuring the correct colour type is inserted at the correct location (the ***8*** white bulb/holders are for gauge illumination, the remaining **24** are for warning indication only).

Connect the flexible printed circuit multi-plug to the **LCD** unit.
Carefully fit electronics pack over flexible printed circuit connections and locate into the **hinges.**
Pivot pack downwards and fit into securing clips.
Fit the flexible printed circuit **to** the edge-connectors, **by** positioning holes in flexible printed circuit membrane over the connector-latch locating pips and sliding latch to the fully closed position.
Align and fit the back cover to the electronics pack. Fit and tighten the securing screws.
Fit the cowl-housing to the pack. Fit and tighten the cowl-housing securing screws.

Fit the instrument pack assembly into dashboard position, re-connect the block connectors.
Align assembly, fit and tighten securing screws.
Return steering wheel to original position.
Refit the dash liner.
Reconnect the battery.

NOTE: On re-connection of the battery, it is important that the ignition is cycled and the bulb check is completed. The odometer reading will then **be** restored to the correct value.

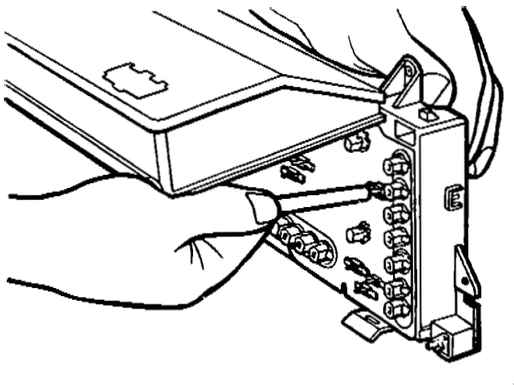


Fig **1**

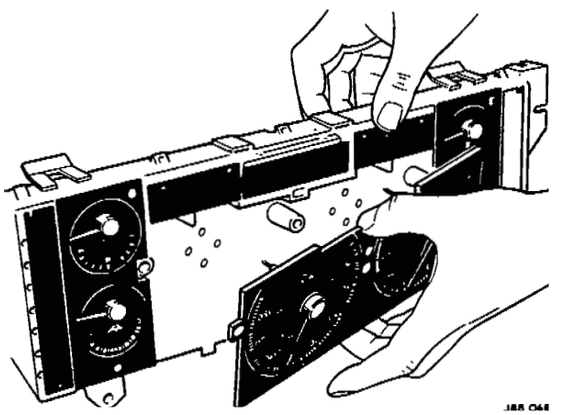


Fig 2

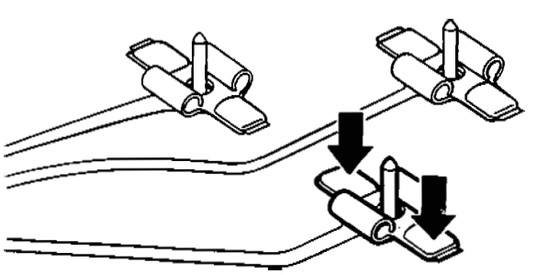


Fig 3

OIL PRESSURE/COOLANT TEMPERATURE GAUGE SET

RENEW **88.25.09**

Disconnect the battery.
Remove driver's side dash liner securing screws, release securing clip, and remove liner.
Release steering column clamp, fully extend steering wheel, and re-tighten the clamp.
Remove instrument pack assembly securing screws.
Disconnect block connectors from rear of pack.
Displace and remove the instrument pack assembly.
Remove the instrument pack cowl-housing screws, and remove the cowl-housing.
Place pack face-down on bench, ensuring that cowl/lens is protected with a suitable cloth or similar.

NOTE: To minimise the risk of damage and contamination, all repairs conducted on the Instrument Pack should be performed in a non-static dust-free environment.

Remove the electronics pack cover securing screws, and remove the cover.
Carefully release the flexible printed circuit ribbon-ends from the edge-connectors, by squeezing grips between thumb and forefinger while sliding out connector latch (Fig.1).
Release electronics pack retaining clips and pivot pack upwards (Fig. 2)
Displace and remove electronics pack from instrument pack by lifting off from hinges.
Displace and remove all warning bulbs (bayonet fitting, twist 1/8th turn anti-clockwise to release) Fig. 3.

NOTE: There are two different types of coloured bulb holders, each type must be returned to the correct location.

Disconnect flexible printed circuit to LCD multi-plug (Fig.1 Page **88-17),** DO NOT remove plug from the outer case of the Instrument Pack.
Remove the 7 veneer panel securing screws, carefully peeling back top corners of the flexible printed circuit to gain access to 2 of the veneer panel securing screws.
With gauges uppermost, release cowl/lens securing clips and remove cowl/lens assembly.

CAUTION: With cowl/lens removed, **DO NOT** rest pack face-down. The gauge needles are extremely delicate and are easily damaged. **Also,** take care not to scratch or damage the gauge faces, ensure cleanliness when handling the pack.

Displace and remove the veneer panel. The LCD module is attached to the veneer panel, but with caution may be removed as a complets assembly.

CAREFULLY, remove oil pressure/coolant temperature gauge set, gently easing the pins out of the printed circuit crimps (Fig 2 Page **88-17).** To prevent widening of the crimp connections, gauge pairs should be kept square to the Instrument Pack moulding whilst removing.

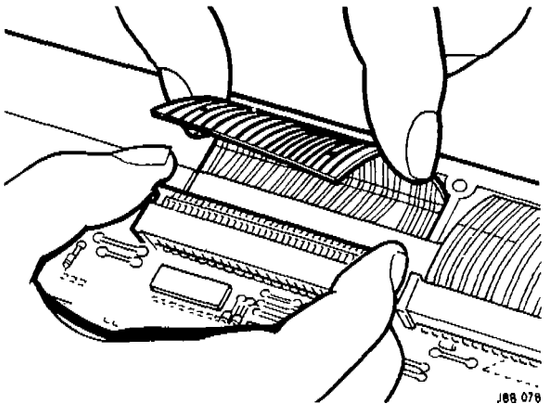


Fig 1

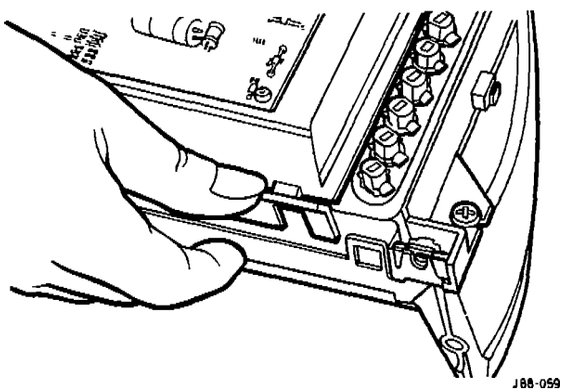


Fig 2

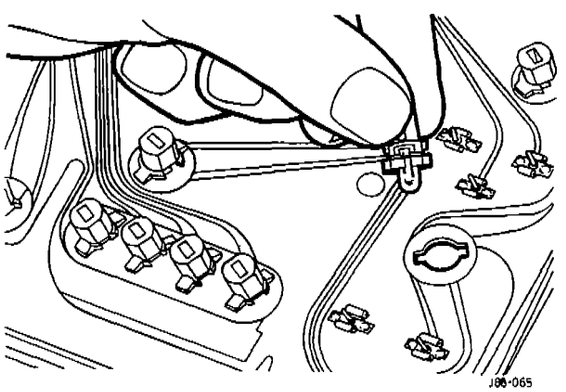


Fig 3

NOTE: Individual gauge movements CAN NOT be serviced, pointers and can location screws should not be removed.

Align and fit the new oil pressure/coolant temperature gauge set to the instrument pack. Take great care not to damage the gauge needles.
CAREFULLY push the gauge pins through the flexible printed circuit. DO NOT press down on the crimps, distortion may occur. Press down on the flat tangs (set at right angles to the crimps) as shown in Fig 3.

NOTE: Take care not to damage crimps or flexible printed circuit. If damage occurs or problems arise due to loose crimp connections, renew the flexible printed circuit.

Before fitting veneer panel, carefully return all gauge needles to "STOP PIN" position.
Align and fit the veneer panel and LCD module assembly. Fit and tighten centre securing screw.
Fit the cowl/lens assembly.
Fit and tighten the six remaining veneer panel securing screws.
Fit and fully seat the warning bulbs, ensuring the correct colour type is inserted at the correct location (the 8 white bulb/holders are for gauge illumination, the remaining 24 are for warning indication only).

Connect the flexible printed circuit multi-plug to the LCD unit.
Carefully fit the electronics pack over the flexible printed circuit connections and locate into the hinges.
Pivot pack downwards and fit into securing clips.
Fit the flexible printed circuit to the edge-connectors, by positioning holes in flexible printed circuit membrane over the connector-latch locating pips and sliding latch to the fully closed position.
Align and fit the back cover to the electronics pack. Fit and tighten the securing screws.
Fit the cowl-housing to the pack. Fit and tighten the cowl-housing securing screws.

Fit the instrument pack assembly into dashboard position, re-connect the block connectors.
Align the assembly, fit and tighten the securing screws.
Return the steering wheel to its original position. Refit the dash liner.
Reconnect the battery.

NOTE: On re-connection of the battery, it is important that the ignition is cycled and the bulb check is completed. The odometer reading will then be restored to the correct value.

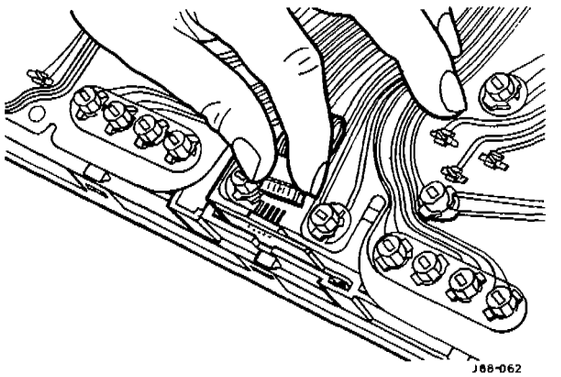


Fig 1

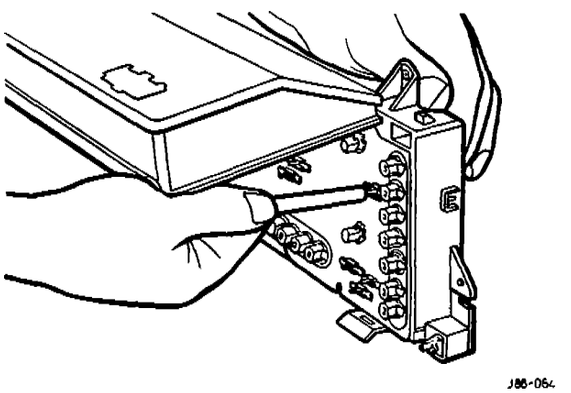


Fig 2

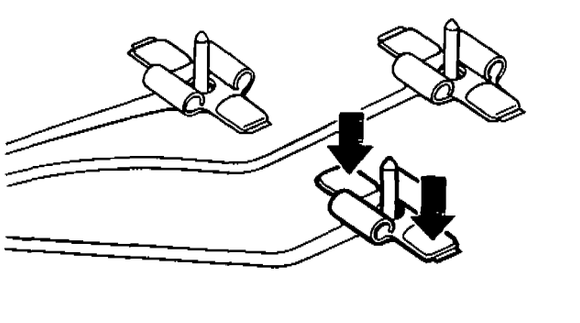


Fig 3

FUEL/BATTERY CONDITION GAUGE SET

RENEW **88.25.33**

Disconnect the battery.
Remove driver's side dash liner securing screws, release securing clip, and remove liner.
Release steering column clamp, fully extend steering wheel, and re-tighten the clamp.
Remove instrument pack assembly securing screws.
Disconnect block connectors from rear of pack.
Displace and remove the instrument pack assembly.
Remove the instrument pack cowl-housing screws, and remove the cowl-housing.
Place pack face-down on bench, ensuring that cowl/lens is protected with a suitable cloth or similar.

NOTE: To minimise the risk of damage and contamination, all repairs conducted on the Instrument Pack should be performed in a non-static dust-free environment.

Remove the electronics pack cover securing screws, and remove the cover.
Carefully release the flexible printed circuit ribbon-ends from the edge-connectors, by squeezeing grips between thumb and forefinger while sliding out connector-latch (Fig.1).
Release the electronics pack retaining clips and pivot the pack upwards (Fig. 2)
Displace and remove the electronics pack from the instrument pack by lifting off from hinges.
Displace and remove all warning bulbs (bayonet fitting, twist 1/8th turn anti-clockwise to release).

NOTE: There are two different types of coloured bulb holders, each type must be returned to the correct location.

Disconnect the flexible printed circuit to LCD multi-plug (Fig.3), DO NOT remove plug from the outer case of the Instrument Pack.
Remove the 7 veneer panel securing screws, carefully peeling back top corners of the flexible printed circuit to gain access to 2 of the veneer panel securing screws.
With gauges uppermost, release cowl/lens securing clips and remove cowl/lens assembly.

CAUTION: With cowl/lens removed, DO NOT rest pack face-down. The gauge needles are extremely delicate and are easily damaged. Also, take care not to scratch or damage the gauge faces, ensure cleanliness when handling the pack.

Displace and remove the veneer panel. The LCD module is attached to the veneer panel, but with caution may be removed as a complete, assembly.

CAREFULLY, remove oil pressure/coolant temperature gauge set, gently easing the pins out of the printed circuit crimps. To prevent widening of the crimp connections, gauge pairs should be kept square to the Instrument Pack moulding whilst removing.

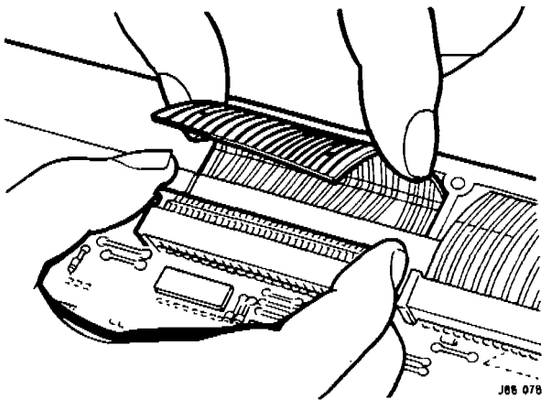


Fig 1

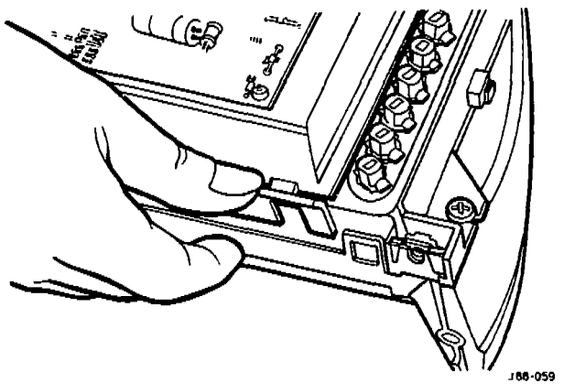


Fig 2

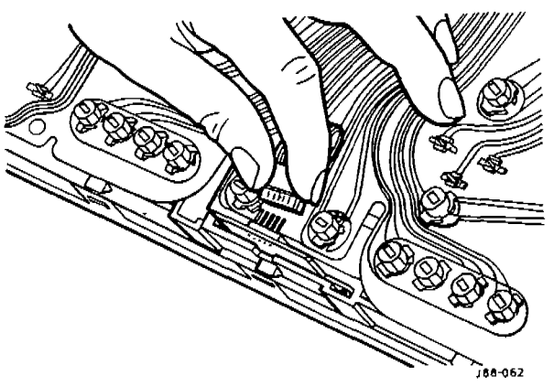


Fig 3

NOTE: Individual **gauge** movements CAN NOT be serviced, pointers and can location screws should not be removed.

Align and fit new fuel/battery condition gauge set to Instrument **Pack** (Fig.2). Take care not to damage gauge needles. CAREFULLY push gauge pins through flexible printed circuit. DO NOT press down on the crimps. distortion may occur. Press down on the flat tangs (set at right angles to the crimps) as shown in Fig 3.

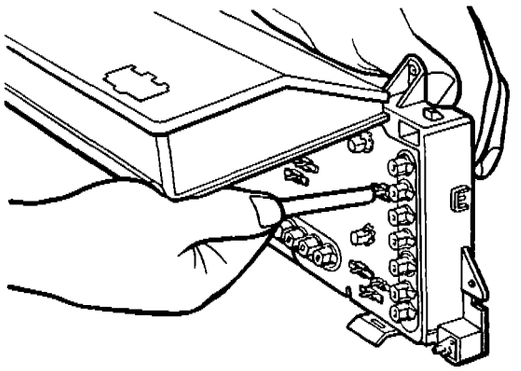
NOTE: Take care not to damage crimps or flexible printed circuit. If damage occurs or problems arise due to loose crimp connections, renew the flexible printed circuit.

Before fitting veneer panel, carefully return **All** gauge needles to **"STOP** PIN" position.
Align and fit veneer panel and LCD module assembly. Fit and tighten centre securing screw.
Fit the cowl/lens assembly.
Fit and tighten the six remaining veneer panel securing screws.
Fit and fully seat the warning bulbs, ensuring the correct colour type is inserted at the correct location (the ***8*** white bulb/holders are for gauge illumination, the remaining 24 are **for** warning indication **only).**

Connect the flexible printed circuit multi-plug to the LCD unit.
Carefully fit the electronics pack over the flexible printed circuit connections and locate into the hinges.
Pivot the pack downwards and **fit** into the securing clips.
Fit the flexible printed circuit to the edge-connectors, **by** positioning holes in flexible printed circuit membrane over the connector-latch locating pips and **sliding** latch to the fully closed position.
Align and fit the back cover to the electronics pack. **Fit** and tighten the securing screws.
Fit the cowl-housing to the pack. Fit and tighten the cowl-housing securing screws.

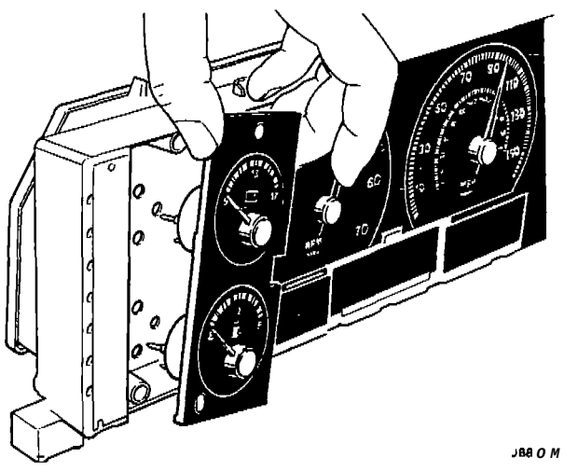
Fit the instrument pack assembly into dashboard position, re-connect the block connectors.
Align the assembly, fit and tighten the securing screws.
Return the steering wheel to its original position. Refit the dash liner.
Reconnect the battery.

NOTE: On re-connection of the battery, it is important that the ignition is cycled and the bulb check is completed. The odometer reading will then be restored to the correct value.



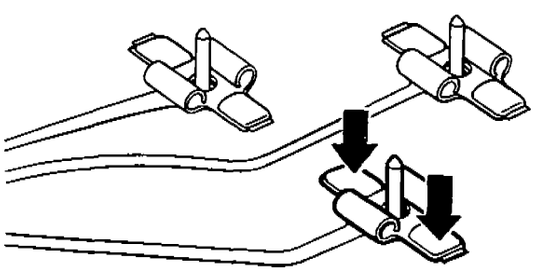
J88-064

Fig **1**



J88 0 M

Fig 2



J88-066

Fig 3

INSTRUMENT PACK LCD MODULE

RENEW **88.20.23**

Disconnectthe battery.
Remove driver's side dash liner securing screws, release securing clip, and remove liner.
Release steering column clamp, fully extend steering wheel, and re-tighten the clamp.
Remove Instrument Pack assembly securing screws.
Disconnect block connectors from rear *of* pack.
Displace and remove Instrument Pack assembly.
Remove Instrument Pack cowl-housing screws and cowl-housing. Place pack face-down on bench, ensuring cowl/lens is protected with a suitable cloth or similar.

NOTE: To minimise risk of contamination and damage, repairs to Instrument Pack should be performed in a non-static dust-free environment. Avoid touching connector pins and pcb track/components, to minimise risk of static damage.

Remove electronics pack cover securing screws and remove the cover.
Carefully release the flexible printed circuit ribbon-ends from edge-connectors, by squeezeing grips between thumb and forefinger while sliding out connector-latch (Fig.1).
Release electronics pack retaining clips and pivot pack upwards (Fig. 2)
Displace and remove electronics pack from instrument pack by lifting off from hinges.
Displace and remove 6 warning bulbs, 2 both sides located adjacent to LCD module, and the 2 bulbs located in module itself (bayonet fitting, twist 1/8th turn anti-clockwise to release).
Disconnectthe flexible printed circuit to LCD multi-plug.
Remove LCD unit securing screws and unit (Fig.3).

Fit new LCD unit into position, fit and tighten LCD module securing screws.
Re-fit the warning bulbs into the empty sockets.
Reconnect the flexible printed circuit multi-plug to the LCD unit.
Carefully fit the electronics pack over flexible printed circuit connections and locate onto hinges.
Pivot pack downwards and fit into securing clips.
Fit flexible printed circuit to edge-connectors, by positioning holes in flexible printed circuit membrane over connector-latch locating pips and sliding latch to the fully closed position.
Align and fit back cover to the electronics pack. Fit and tighten the securing screws.
Fit the cowl-housing to the pack.
Fit and tighten the cowl-housing securing screws.

Fit the instrument pack assembly into dashboard position, re-connectthe block connectors.
Align assembly, fit and tighten the securing screws.
Return steering wheel to original position.
Refit the dash liner.
Reconnect the battery.

NOTE: On re-connection of the battery, it is important that the ignition is cycled and the bulb check is completed. The odometer reading will then be restored to the correct value.

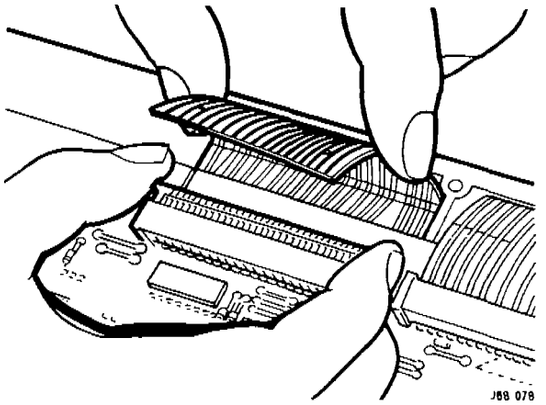


Fig 1

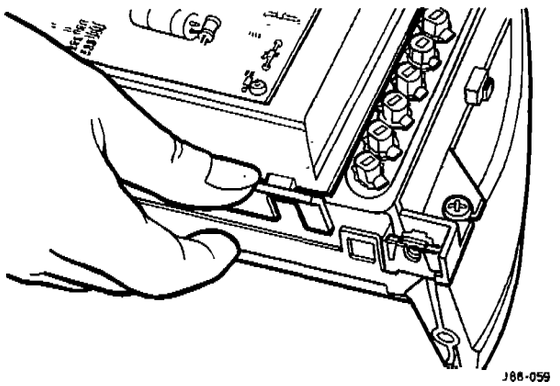


Fig 2

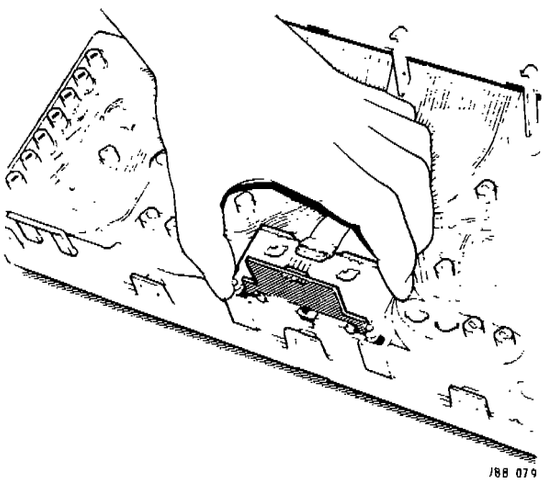


Fig 3

INSTRUMENT PACK ILLUMINATION BULBS

RENEW **86.45.49**

NOTE: The following five instrument pack bulbs (located in the lower right hand corner area of the pack) are accessible without removing the pack:

1 Seat belt warning bulb.
2 Boot open warning bulb.
3 Door open warning bulb.
4 Coolant temperature warning bulb.
5 Low coolant warning bulb.

NOTE: There are 8 white bulb/holders for gauge illumination. the remaining 24 brown bulb/holders are for warning indication only, the two types are not inter-changeable).

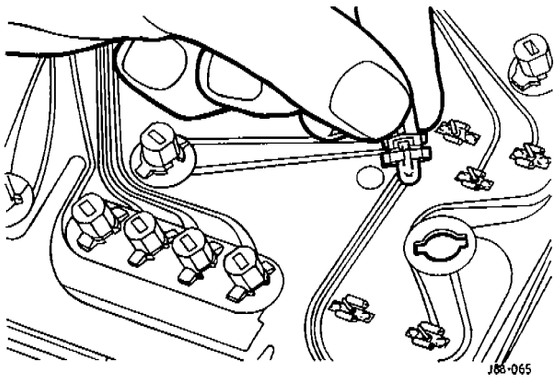


Fig 1

All other warning bulbs, proceed as follows:

Disconnect the battery.
Remove the driver's side dash liner securing screws, release the securing clip, and remove the liner.
Release the steering column clamp, fully extend the steering wheel, and re-tighten the clamp.
Remove the instrument pack assembly securing screws.
Disconnect the block connectors from the rear of the pack.
Displace and remove the instrument pack assembly.

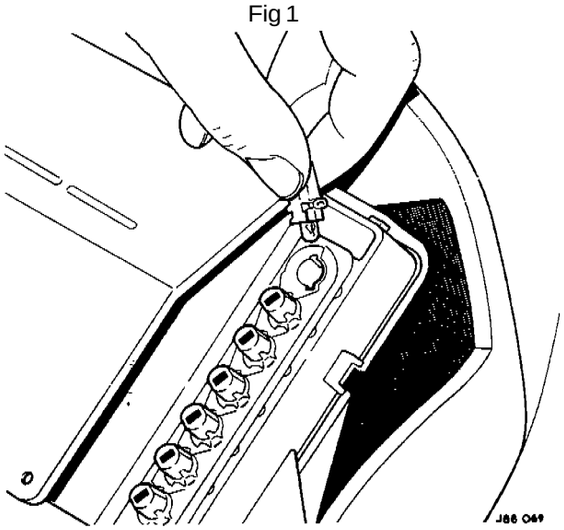


Fig 2

Place the pack face down on the bench, ensuring that the cowl/lens is protected with a suitable cloth or similar.

NOTE: To minimise the risk of damage and contamination, all repairs conducted on the Instrument **Pack** should be performed in a non-static dust-free environment.

Remove the appropriate bulb (Figs 1 & 2), check for damage/serviceability and replace as necessary (bayonet fitting, twist one eighth of a turn anti-clockwise to release).

NOTE: For access to the gauge and lower pack bulbs, release the electronics pack retaining clips and pivot the pack upwards (Fig 3).

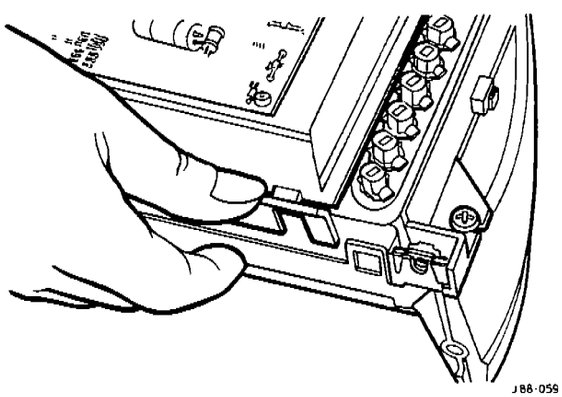


Fig 3

Fit the instrument pack assembly into dashboard position, re-connect the block connectors.
Align the assembly, fit and tighten the securing screws.
Return the steering wheel to its original position. Refit the dash liner.
Reconnect the battery.

NOTE: On re-connection of the battery, it is important that the ignition is cycled and the bulb check is completed. The odometer reading will then be restored to the correct value.

SPEED SENSOR

RENEW **88.30.03**

Drive vehicle onto ramp.
Open bonnet and disconnect battery earth lead.
Open luggage compartment and remove trim.
Disconnect speed sensor cable harness block connector.
Raise vehicle on the ramp.
Cut and remove cable straps.
Remove bolts securing the speed sensor.
Displace and remove the sensor (Fig 1).

On refitting new sensor ensure air gap between sensor probe and toothed wheel is 0.5 to 0.9 mm.
Fit and tighten the securing bolts.
Secure the harness with new cable straps.
Lower ramp.
Refit the harness block connector.
Refit the luggage Compartment trim.
Reconnect battery earth lead.

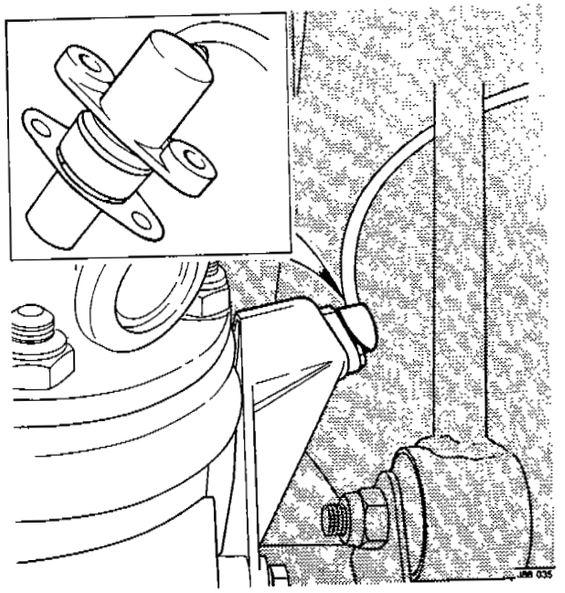


Fig 1

COOLANT TEMPERATURE TRANSMITTER

RENEW ***88.25.20***

NOTE: the procedure described below should only be carried out on a cold engine.
Open bonnet and disconnect battery earth lead.
Slacken coolant reservoir cap to remove any residual pressure. Tighten cap.
Disconnect the supply cable.
Undo and remove the transmitter (Fig 2).
Clean the housing.
Fit and tighten the new transmitter.
Reconnect supply cable.
Reconnect battery earth lead.

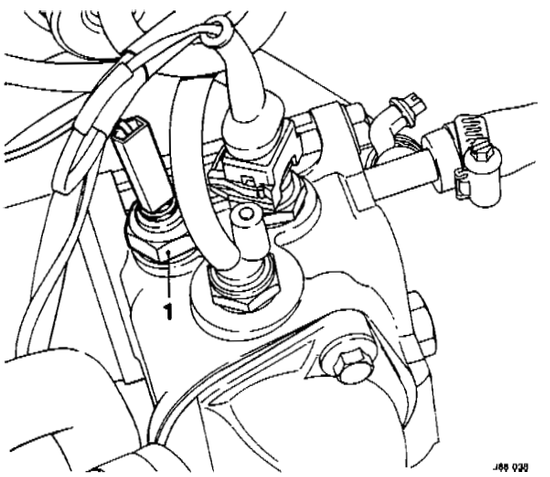


Fig 2

LOW COOLANT LEVEL PROBE

RENEW **26.40.11**

NOTE: The following procedure should only be carried out on a cold engine.
Open bonnet and disconnect battery earth lead.
Slacken off coolant reservoir cap to remove any residual pressure. Tighten cap.
Disconnect the harness multi-plug and release the harness securing clips.
Slacken off and remove the probe (using finger pressure, rotate the probe anti-clockwise 1/8th turn and remove), discard the O-ring (Fig 3).

Fit the new probe complete with new O-ring into position. Tighten by pressing down and rotating the probe clockwise 1/8th turn.
Reconnect harness, secure with retaining clips.
Reconnect battery earth lead.

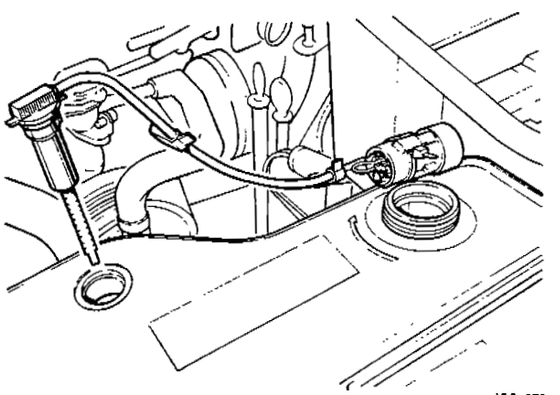


Fig 3

FUELGAUGETANK UNIT

RENEW 88.25.32

WARNING: THIS OPERATION RESULTS IN FUEL AND FUEL VAPOUR BEING PRESENT IN THE ATMOSPHERE.
FUEL VAPOUR IS EXTREMELY FLAMMABLE, THEREFORE GREAT CARE MUST BE TAKEN WHEN WORK IS CARRIED OUT ON THE FUEL SYSTEM.
THE FOLLOWING PRECAUTIONS MUST BE STRICTLY ADHERED TO:

1 NO SMOKING IN THE WORK AREA.
2 'NO SMOKING' WARNING SIGNS MUST BE POSTED ROUND THE AREA.
3 A CO^2 FIRE EXTINGUISHER MUST BE CLOSE AT HAND.
4 DRY SAND MUST BE AVAILABLE TO SOAK UP ANY FUELSPILLAGE.
5 EMPTY THE FUEL FROM THE TANK USING SUITABLE FIREPROOF EQUIPMENT.
6 FUEL MUST NOT BE EMPTIED INTO A PIT.
7 THE WORKING AREA MUST BE WELL VENTILATED.
8 THE FUEL MUST BE EMPTIED INTO AN AUTHORISED EXPLOSION PROOF CONTAINER.

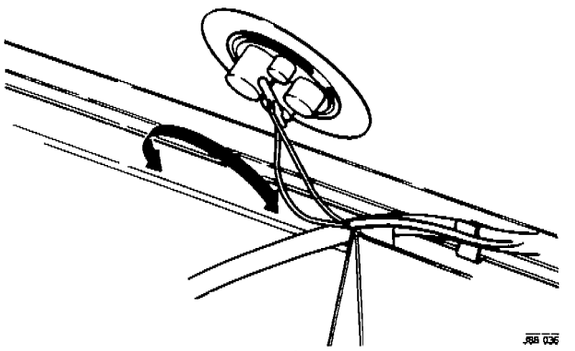


Fig 1

Open bonnet and disconnect battery earth lead.
Remove luggage compartment floor carpet.
Remove luggage compartment front liner.
Disconnect tank unit supply leads.
Rotate tank unit securing ring (Fig 1) using Service Tool 18G1001. Remove the securing ring.
Remove the tank unit.
Remove and discard the gasket.

Ensure new sealing gasket and new locking ring is fitted when replacement tank unit is fitted.
Tighten locking ring with Service Tool 18G 1001.
Reconnect the tank unit supply leads.
Refit luggage compartment front liner.
Refit luggage compartment floor carpet.
Reconnect battery earth lead.

DATA

SERVICE TOOLS

78G 1001 Locking ring spanner

0467G

AUTOMATIC TRANSMISSION UNIT LINEAR SWITCH

RENEW **44.15.12**

Open bonnet and disconnect battery earth lead.
Open car door.
Remove gear lever knob and console finisher.
Remove screws securing linear switch (1 Fig 1).
Displace the switch for access.
Disconnect cable harness block connectors
Remove switch assembly (2 Fig 1).

On fitting new switch select 'N' neutral.
Fit new switch into position.
Fit but do not tighten the securing screws.
Position Service Tool setting gauge JD 127 (Fig 1) between linear switch and side plate.
Ensure slot of the setting gauge is fully located onto the pin of the linear switch.
Tighten the securing screws.
Remove the setting gauge.
Check that the vehicle starts in 'PARK and 'NEUTRAL' but does not start in other positions.
Check the bar graph on the instrument pack indicates the correct position of the gear selector.

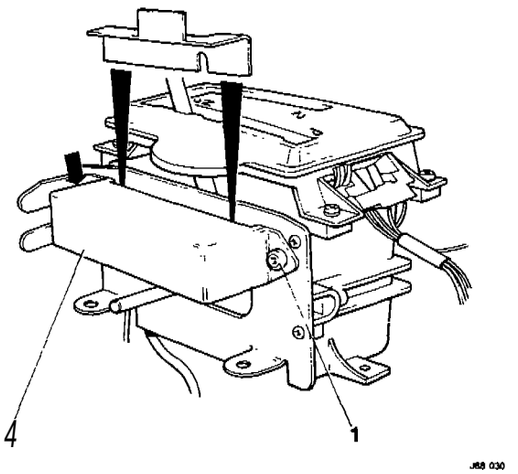


Fig 1

DATA

SERVICE TOOLS

***JD 127** Setting gauge*

0467G

SEAT PAD SWITCH

RENEW **86.57.21**

Open bonnet **and** disconnect battery earth lead.
Remove the front seat cushion.
Displace the accessible diaphragm hooks (1 Fig 2) from the frame and reposition the diaphragm for access.
Cut and remove the ratchet strap securing the cable harness.
Remove the seat belt switch pad.

Fit the new switch into position, fit a new ratchet strap to the harness.
Refit the diaphragm, fit the securing hooks.
Refit the seat cushion.
Reconnect the battery earth lead.

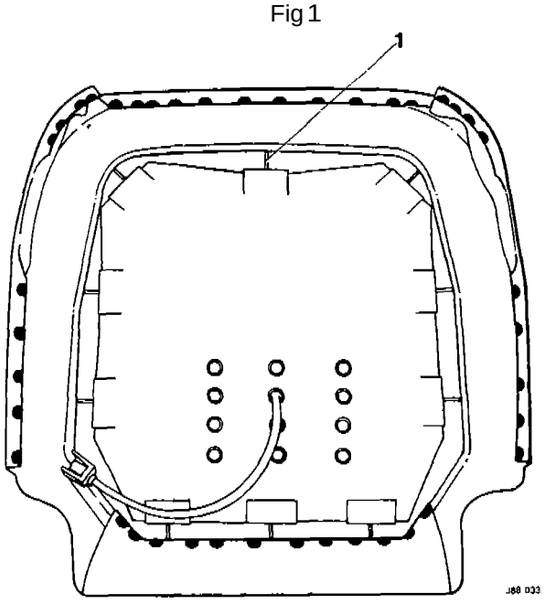


Fig 2

0467G

SEAT BELT BUCKLE SWITCH

RENEW **86.57.25**

Open bonnet and disconnect battery earth lead.
Remove 'B' post lower trim pad,
Remove seat belt upper anchor securing nut cover.
Remove upper anchor securing nut.
Displace the seat belt.
Remove the wavy washer and spacer.
Unclip the B post upper trim pad and displace the pad from its mounted position.
Reposition belt through trim pad and remove pad.
Remove finisher from the 'B' post aperture.
Reposition seat belt through the 'B' post.
Remove nut securing seat belt reel.
Remove the reel.
Disconnect the cable harness block connector.
Remove the seat belt buckle securing nut cover (1 Fig 1).
Remove bolt securing seat belt buckle (2 Fig 1).
Remove the seat belt buckle (3 Fig 1).
Note position of and remove the buckle spacers.

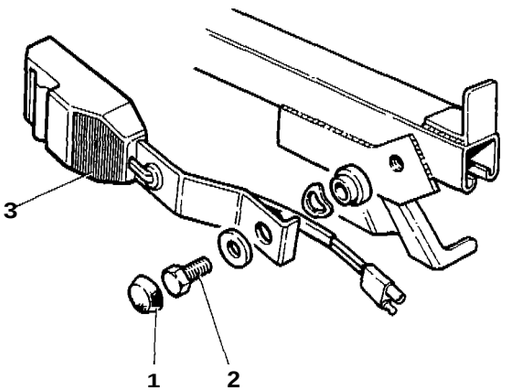


Fig 1

Fit new buckle assembly, ensure that spacers are correctly located.
Fit and tighten the buckle securing bolt. Fit the bolt cover.
Reconnect the harness. Refit the seat belt reel.
Fit and tighten the securing nut.
Locate the seat belt through the 'B' post. Fit the finisher.
Locate seat belt through the upper trim pad. Fit the pad to position.
Fit the seat belt upper anchor, fit and tighten the securing bolt.
Refit the 'B' post lower trim pad.
Reconnect the battery earth lead.

DATA

TORQUE FIGURES

Seat belt anchor bolts 27Nm

SPANNER SIZES

17mm

04670

WASHER RESERVOIR SENSOR

RENEW **84.10.17**

Open bonnet and disconnect battery earth lead.
Jack up front of vehicle and support on two axle stands.
Remove nuts, bolts, screws and washers securing inner wing valance.
Displace and remove inner wing valance.
Remove brake disc cooling duct.
Disconnect washer pump and reservoir level sensor multi-plug connectors (1 Fig 1).
Disconnect washer pump tubing from pump (2 Fig 1).
Remove bolts and washers securing reservoir (3 Fig 1).
Remove reservoir from the filler neck.
Drain the water from reservoir.
Remove bolt securing washer motor clamp plate, remove plate and remove pump from grommet (4 Fig 1).

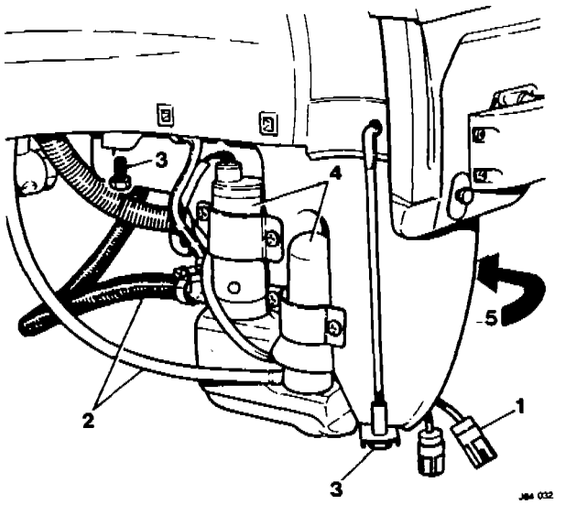


Fig 1

Displace and remove fluid level sensor (5 Fig 1).
Remove the clamp nut/grommet assembly.

Fit the new reservoir sensor into position.
Fit the clamp nut/grommet assembly.
Fit the reservoir to the filler neck.
Fit and tighten the reservoir securing bolts.
Reconnect the harness multi-plugs.
Refit the cooling duct and inner valance.
Remove the stands and lower the vehicle.

DATA

TORQUE FIGURES

Reservoir securing bolts** nuts **19-24Nm

SPANNER SIZES

13mm
No 4 Pori

SPORT MODE SWITCH

RENEW **86.65.84**

Carefully displace sport mode switch (Fig 2) from the gear selector finisher.
Disconnect the harness multi-plug.

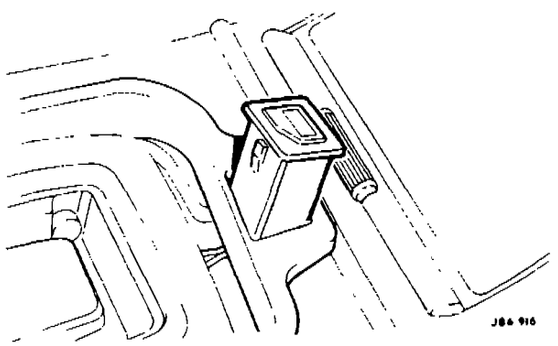


Fig 2

Connect the harness multi-plug to the new switch.
Fully seat the switch into the finisher.

1991 MODEL YEAR MODIFICATIONS

WARNING LIGHTS *88.00.00*

The sport mode indicator and park brake warning light have changed position with one another on the instrument pack. This is only a visual position change, there is no change in operation or function.

The sport mode indicator is illuminated when the gearbox is in sport mode. It is wired through the instrument pack dimmer. Reducing the illumination at night will also dim the sport light to prevent distractions.

FUEL GAUGE UNIT *88.00.00*

The introduction of the in-tank fuel pump necessitates fitment of a revised tank sender unit. The original 90 model year sender unit causes a foul condition on the pump and must therefore not be used on 91 model year vehicles.
These alterations cause changes to the fuel tank calibration. The resistance of the sender unit has been changed to allow optimum accuracy and linearity of the fuel gauge.
The result of these modifications mean a 91 model year instrument pack cannot be used with a 90 model year sender. It is important to ensure the gauge and sender unit are compatible. Incompatible units will cause the gauge to show false information.
A 91 model year matched set, ie. gauge and sender unit can be fitted to a 90 model year vehicle as the physical changes to the sender cause no problems.